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NORTHERN LIGHTS



HENRY GEORGE WATKINS

NORTHERN LIGHTS

THE OFFICIAL ACCOUNT OF THE
BRITISH ARCTIC AIR-ROUTE EXPEDITION

1930-1931

By

F. SPENCER CHAPMAN

With a Foreword by

ADMIRAL SIR WILLIAM GOODENOUGH

An Introduction by

The late H. G. WATKINS, Leader of the Expedition

And additional chapters by

J. M. SCOTT, CAPT. P. M. H. LEMON &
AUGUSTINE COURTAULD

With a Map

And 32 pages of Plates

LONDON

CHATTO AND WINDUS

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Foreword

By Admiral Sir William Goodenough, K.C.B., M.V.O.

President of the Royal Geographical Society

GINO WATKINS was destined to command. Short as was his life it was a destiny he fulfilled. Leadership came to him naturally. It is a common saying that in order to command one must first learn to obey, but here was one who appeared to leap fully equipped from the levels of boyhood to the eminence of a man's directive power. At first contact there was little to indicate this to the casual observer. Slight in figure, quiet, almost soft in voice, there was no prominent feature that called for striking recognition. Men who looked for some mark in face or speech which would display the commanding personality, which after his first two expeditions they knew existed, were almost startled at his youthful appearance.

It was when one had the advantage of speaking with him, watching his methods and hearing his detailed plans, that one became aware of the deep-seated strength of character that carried him onwards through the busy five years from 1927 to 1932. Beneath that easy manner lay a power of application which gave consideration to all eventualities, and thought of them on broad and comprehensive principles.

He assumed leadership without effort for the reason that he never considered whether he would, or would not, receive the confidence of his fellows. He took it naturally. It never occurred to him to be otherwise than loyal, heart and soul, to all those with whom he dealt, and he saw others as he was himself: simple, direct, gay and very lovable.

At Cambridge his imagination was stirred by the lectures of Mr. Priestly and others on Polar travel. To him the stirring of

FOREWORD

imagination was quickly translated into action, and the outcome was the expedition to Edge Island when, not yet 21, he led and commanded a party of nine, some of whom were men far senior to him in years, and these have testified to his powers. That expedition showed his aspirations.

In 1928 his attention was called to Labrador and a year was spent with two companions surveying, mapping and travelling. A journey of six hundred miles, dragging a sledge part of it about ten miles a day on not more than a cupful of flour a day, was undertaken. This showed his mettle, and he came to the initiation of the British Arctic Air-Route Expedition a man of experience whose word on Polar travel was already much respected.

The expedition, of which this book is an account, gave him an opportunity of making use of that strength of character and experience to a marked degree. He returned from it a recognized authority. Written by Mr. Chapman and others, a full description will be found here of the work of the expedition of which Gino Watkins was the originator, organizer and the leader. It tells of work which would be a memorable achievement for many an older man.

The great project of a trans-continental journey in the Antarctic which he had in mind had to be set aside for a time, and he turned at once to a new effort, the one on which he met his death. It is difficult to realize that that vivid personality has gone, that brilliant life is over. He has left behind a glorious memory, and in his name I would render what, had he been alive, he would have rendered himself—his gratitude and thanks to those to whom he ever gave credit—his companions.

HENRY GEORGE WATKINS

BORN JANUARY 29TH 1907

DIED IN GREENLAND AUGUST 20TH 1932

The following letter from Dr. Hugh Robert Mill appeared in The Times of August 25th 1932, and is reprinted here by kind permission.

Deeply as one grieved a few months ago over the loss by drowning in South America of a lifelong friend in J. W. Gregory, a hardened veteran of strenuous travel, there is a keener sadness of regret in the shock at learning of the death in Greenland of so young, so recent, and so dear a scientific adventurer as "Gino" Watkins. No one with whom he associated could think of him but by his pet name "Gino." He was little more than a boy in years; altogether a boy in his spirit of optimism, though with all a man's power of steadfast will and with that inborn instinct of leadership which is the rarest and most valuable gift for an explorer. I have known, I may say, all the Polar explorers of the last half-century, but no one can stand beside young Watkins, save the young Fridtjof Nansen as I met him first on his return from the first crossing of Greenland 44 years ago. Both had the charm of a winning personality; both had the clearness of vision to plan great and new ventures and the firmness of mind to carry them through despite all the buffeting of fate; both had the essential modesty which shrank from vulgar publicity and saved them from the deteriorating influence of sudden popularity. Watkins was loved by his comrades, with whom he generously shared the credit for their joint achievements, and he drew the affection of older men in a way I had never seen equalled. So it is that, while deploring the loss of an explorer of rare promise already largely fulfilled, we long for the power to express for the twentieth century the emotion which inspired "Lycidas" and "In Memoriam."

ACKNOWLEDGMENTS

Grateful thanks are due to the *Royal Geographical Society* for their courtesy and assistance rendered in the production of this volume, and to the *Scott Polar Research Institute*, Cambridge, for the map on p. 3 of the Introduction.

Of the plates included in this book, the majority were made from photographs taken by Flight-Lieut. H. I. Cozens, the official photographer, supplemented by a number of others taken by various members of the Expedition.

Thanks are also due to the *Albion Film Syndicate*, producers of the Expedition's film "Northern Lights", from which the title of this book is taken.

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NOTE

A map of Greenland showing the seven journeys of the Expedition, and specially folded so as to remain open while the book is in course of being read, will be found inside the back cover.

Introduction

THE possibilities of an Arctic Air-Route between Europe and America have been discussed for many years. The advantages of such a route are many. In the first place, owing to the shape of the world, the shortest line between England and Canada lies across Greenland; secondly, there are no long sea crossings; and lastly, the weather in most parts of the Arctic is more stable, and easier to forecast, than in England.

During 1928-29 J. M. Scott and I spent a year exploring the interior of Labrador, and it was while on this expedition that I started to plan a larger expedition to Greenland to study the possibilities of the Arctic Air-Route. When we got back to London Scott and I started to work out the plans in more detail, and in this work we were joined by Augustine Courtauld, who had just returned from an expedition to Greenland.

The least-known part of the proposed route was the East Coast and central Ice Plateau of Greenland, and it was here that we decided to work. The whole of the interior of Greenland is covered with an Ice Cap reaching to a height of about 8,000 or 9,000 feet in the centre. In many places along the coast this ice sheet reaches the sea, in others there is a coastal mountain belt varying in width from one to a hundred miles.

On the East Coast of Greenland there are two Eskimo Settlements, one at Angmagssalik just below the Arctic Circle, and one at Scoresby Sound, about 600 miles up the coast. The most obvious place for an air base in East Greenland is at Angmagssalik, but it seemed possible that a more suitable place might be found either North or South of this. Our plan was to establish a Base somewhere near Angmagssalik, and to carry out the following work:

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(1) To keep continuous weather observations at the Base for one year.

(2) To establish a station on the Greenland Ice Cap on the highest point between our Base and the West Coast, and to keep weather observations at this station for one year.

(3) To map the coast North of our Base from Angmagssalik to Cape Dalton, a distance of about 380 miles.

(4) To map the inside of the coastal mountain belt North of our Base as far as Kangerdlugsuak, if possible climbing Mount Forel on the way.

(5) To map the coast South of the Base for a distance of 60-100 miles.

(6) To investigate the height and weather conditions on different parts of the Ice Cap by means of long journeys: we planned two main Ice Cap journeys, one North and one South along the centre of the Ice Cap.

(7) Our two aeroplanes were to be used for air photography to assist mapping, and also to test the flying conditions throughout the year in East Greenland.

(8) At the end of the year we hoped to do a demonstration flight along the whole route between England and Winnipeg.

(9) A study was to be made of the geology and ornithology of East Greenland.

It will be seen that these plans were considerably altered during the course of the expedition. Some of the proposed journeys were never attempted, and many journeys were made which had never been contemplated before we left England.

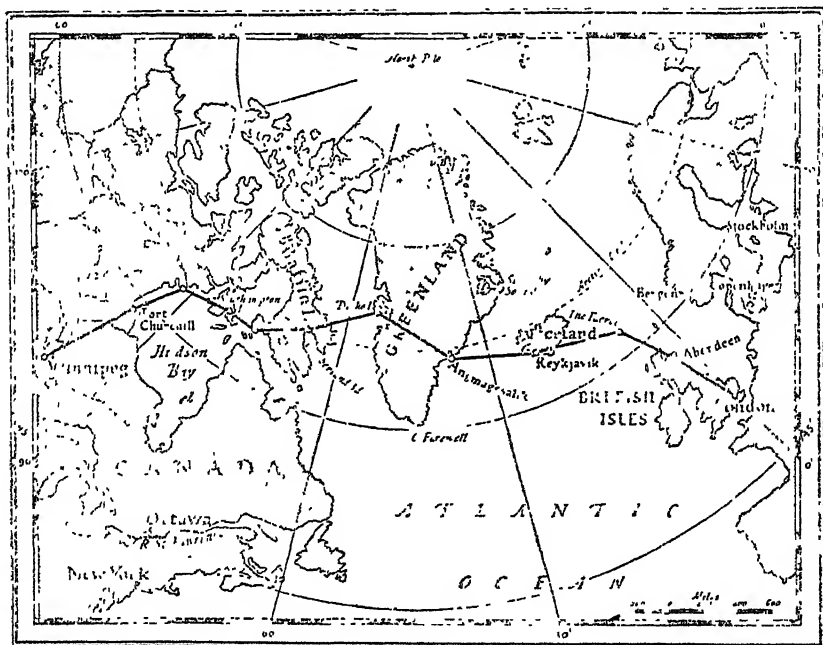
The expedition had the financial support of the Royal Geographical Society, and was greatly assisted by the Air Ministry, the War Office and the Admiralty, who lent personnel and instruments. The Danish Government also gave considerable assistance. It was, however, mainly owing to the enthusiasm of the Courtauld family and a few others that the expedition was made possible.

A Committee was formed consisting of Mr. Stephen Courtauld

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(Chairman); Mr. A. Courtauld (Treasurer); Captain R. Rayner, O.B.E. (Secretary); Mr. J. M. Wordie, Mr. A. Holt, and myself as leader of the expedition, and H.R.H. the Prince of Wales honoured the expedition by consenting to become the President of this Committee. The expedition owes its greatest debt to Mr. Stephen Courtauld, Chairman of the Committee, and it was almost entirely due to his advice, hard work, and support that the expedition was successful.

The choice of the personnel was left entirely to me, and out



of the many people who applied I was able to select thirteen suitable men who had the necessary qualifications. The greatest praise I can give these men is to say that if I was planning the expedition again I would make the same choice. In this party of fourteen, Scott, Courtauld, and I were the only ones with any Arctic experience. I have always deliberately chosen amateurs for such expeditions rather than men who have had Arctic

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experience on expeditions other than my own. Men who have been on other expeditions, or who have lived in the Arctic, will have formed their own opinions as to the best method of travel, and the best way of living in the Arctic. I prefer that all members of my expeditions should have gained their knowledge with me, since in that case I always know the exact amount of experience possessed by each member of any sledging party. If anything goes wrong with one of these parties and it fails to turn up at the proper time, I can judge more easily what the leader of the party will do in an emergency.

As leader of the expedition I should have written this book. Unfortunately since I have been back in England I have not found time to do so, as I have been planning an expedition to cross the Antarctic Continent. Since this has fallen through owing to lack of funds I have organized another Arctic expedition. In seven days' time, Rymill, Chapman, Riley and I are returning to Greenland for another year. This new expedition is the logical outcome of the British Arctic Air-Route Expedition. Although the scientific and especially the meteorological results of the British Arctic Air-Route are not yet fully worked out, it is quite clear that some day this route will be used. The gales we experienced are purely local and reached their maximum force at the edge of the Ice Cap where our Base unfortunately happened to be. At Angmagssalik, only 30 miles Westward, the blizzards were not nearly so severe. On the last expedition we found the most suitable place on the East Coast for an Air Base and that is where we shall be this year to prove that an Arctic Air-Route is more than a possibility.

It has been a difficult task for Chapman, since this book is the official account of the expedition; yet as he was a member of the expedition, and not the leader, it is not easy for him to look at things from the leader's point of view. It is almost impossible for a member of any expedition to see the true importance of each journey, and he is bound to increase unconsciously the importance of any journey which he has been on

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himself, and to fit it into his own perspective. Chapman has borne this in mind and I am entirely satisfied with his narrative. He has at least one great advantage over me in writing the book of this expedition. It was his first visit to the Arctic; everything was new to him, and he describes the things which will interest everyone. The discomfort of sleeping in a frozen sleeping-bag, frost-bite, blizzards, and food shortage, are all things so common on long sledge journeys that anyone except the man on his first Arctic expedition will probably forget about them. Yet these are the things which most people wish to hear about, and a book without them would simply be a long list of the journeys carried out. The preparations for our return to Greenland have been somewhat hurried and Chapman has not had time to make the final corrections of his manuscript. This, and all the tedious work of reading proofs and of getting a book of this sort through the press, have been undertaken by J. M. Scott.

H. G. WATKINS
Royal Geographical Society.

July 3rd, 1932.

CHAPTER I

Finding a Base

ALTHOUGH the plans for an Expedition to East Greenland had been maturing in the leader's mind while he followed his dog-sledge on his previous expedition among the mountains in the interior of Labrador, it was only at the last moment that they became practical. This was due to the generosity of various firms and private individuals and to the co-operation of the Royal Geographical Society. On account of the trade depression in the early months of 1930, it was more than usually difficult to raise funds for such an enterprise. Thus it happened that the early preparations had to be rather tentative; but the expedition grew in scope as the funds came in and H. G. Watkins had to do most of the work during the last few weeks before we sailed.

Although Watkins was only 23 at this time, he had already more than once borne similar responsibilities. When he was nineteen he had led the Cambridge Expedition to Spitsbergen in the summer of 1927: there he had added materially to the existing maps of Edge Island and done other scientific work; and in 1928-29, he had led an expedition to Labrador to survey the unknown upper reaches of the Hamilton River. It was here that he obtained his experience of dog-driving and winter travel, and that urgent love for the Arctic Regions which determined him to organize a still larger venture to Greenland.

Of the other thirteen members of the expedition there were only two with previous Arctic experience: J. M. Scott had been with Watkins in Labrador, while A. Courtauld was a member of J. M. Wordie's expeditions to Greenland in the summers of

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1926 and 1929. At the beginning of May, Scott sailed for West Greenland and chose fifty sledge dogs from Jakobshavn and the neighbouring settlements. He took them to the Faroe Islands and kept them there on a lighter at Captain Ejnar Mikelsen's whaling station until the expedition ship picked them up in July.

As the other members joined the expedition they were assigned special duties in the preparation of stores and equipment. A. Stephenson was to be chief surveyor, but since he was busy with his final tripos examinations until the middle of June he had only a short time in which to collect the surveying equipment and was glad of Courtauld's help and experience. The other surveyors were J. R. Rymill, Lieutenant Martin Lindsay of the Royal Scots Fusiliers and myself. We had all been instructed by Mr. Reeves, the Map Curator of the Royal Geographical Society, who has been the friend and teacher of every young explorer since the time of Scott and Shackleton. Besides surveying I was to do the ornithological work of the expedition and to be in charge of ski-ing.

We took two De Havilland Gipsy Moths. Flight-Lieutenant N. H. D'Aeth, of the R.A.F., was in charge of flying and W. E. Hampton, a Flying Officer in the Air Force Reserve and the holder of a "B" licence, came as ground engineer. Together they made out and collected a most comprehensive list of tools and spare parts which might almost have built a third machine. Besides these two, our photographer, Flight-Lieutenant H. I. Cozens, and also Watkins and Rymill, could act as spare pilots.

The other scientists were Captain P. Lemon, of the Royal Corps of Signals, who had been experimenting with wireless since 1914 and was also a very competent operator; L. R. Wager, a lecturer in geology at Reading University and an experienced mountaineer; Quintin Riley, who spent several months working at Kew Observatory and filled in his spare time by checking our stores at St. Catherine's Dock; and Surgeon-Lieutenant E. W. Bingham, who only left his ship at the last moment and had to



N. H. D'AETH



L. R. WAGER



QUINTIN RILEY



H. G. WATKINS



P. LEMON



A. STEPHENSON



MARTIN LINDSAY

FINDING A BASE

work hard to collect the medical stores and his own equipment before we sailed.

All these did their share of the preparations, but it was on Watkins' shoulders that the great burden of the organization rested. He had to charter the ship; to visit Copenhagen and make the necessary arrangements with the Danish Government; to work out and procure the rations for sledging journeys and the food and equipment for the Base—these were only a few of his responsibilities.

We were most fortunate in being able to charter the *Quest* from her Norwegian owners: she was well tried in polar work and had an interesting history. She was a wooden ship, her bows sheathed in greenheart to resist the ice; she was 125 tons, 111 feet long and of 23 feet beam. Originally she was built for sealing and called the *Foca I*, but her name was changed to the *Quest* in 1921 when Sir Ernest Shackleton bought her for his last Antarctic expedition. Then in 1925 she was sold to a Norwegian sealing company and in 1928 she took a prominent part in the search for General Nobile.

The *Quest* sailed up the Thames on July 4th and we saw her turn in the brilliant sunshine to enter St. Catherine's Dock. She was snowy white with a vivid patch of orange paint above her bows; and high up on the foremast the barrel-shaped crow's-nest which is the hall-mark of all ice ships.

On the night before we sailed Major S. L. Courtauld gave a farewell party at the dockside. Among the guests were Lord Thompson, the Secretary for Air, and Sir Sefton Brancker, the Director of Civil Aviation—both of whom, owing to the tragedy of the R 101, we did not meet on our return—and many others of our supporters. Here we had a first opportunity of meeting Captain Schjelderup, the skipper of the *Quest*, whom we were to get to know so well in the next few months. Though still a young man he was one of the most experienced and dauntless of ice pilots.

Early on the morning of July 6th, with multi-coloured buntings

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flying, and our own flag—a white polar bear with wings, on a pale-blue ground—at the foremast, we steamed slowly down the Thames accompanied by a tremendous hooting of sirens.

At Gravesend we met Major Courtauld's yacht, the *Virginia*, and were entertained to lunch. It was here that the first casualty on the expedition occurred: a pet lemur on board the *Virginia* nipped an artery on the back of Lemon's hand, and it was all the Doctor could do to stop the bleeding.

The voyage out was, I suppose, much like any other voyage when twenty-six men are crowded with their baggage on board a small ship. We called at Blyth for coal and then steamed slowly up the coast of Scotland till we almost came to a standstill beating through the Pentland Firth. It was here that the Graf Zeppelin passed over us on the way homeward after her Arctic voyage.

Not much of interest occurred on board except when the ship's carpenter put his hand into the metal propeller of the wind-generator we had rigged up on the bridge. Apparently he wanted to see what would happen. He was not disappointed. Later on further amusement was caused when the Captain decided to kill a turkey which had been presented to us for our Christmas dinner. This turkey had been tethered to the mast, and during the night had complained of its captivity so loudly that the crew had little sleep. Captain Schjelderup held the turkey firmly by the neck and with an enormous axe chopped off its head, and handed the body over to the steward. Unfortunately at this stage the wings of the turkey started to flap with increasing and unbelievable energy; and both men had to exert themselves to the uttermost to prevent the bird escaping them. By the end of the encounter both the Captain and the steward were covered from head to foot in blood, and the onlookers were quite helpless with laughter.

On the evening of July 10th we saw with relief the purple cloud-capped Faroe Islands, and in the early morning of the 11th the *Quest* was searching for Captain Mikkelsen's whaling station. We soon picked up a boatload of Faroese fishermen who showed



J. M. SCOTT



H. I. COZENS



AUGUSTINE COURTAULD



E. W. BINGHAM



W. E. HAMPTON



J. R. RYMILL



F. S. CHAPMAN

FINDING A BASE

us the way, till suddenly, quite near, we heard all the dogs start howling together like a wolf-pack—a most thrilling sound, especially when heard for the first time.

Soon Scott came out to meet us. He had kept the dogs for six weeks on an old lighter anchored out in the harbour. One dog, always very wild, had escaped from the lighter, swum ashore, and before it could be shot had killed nine sheep. I was amazed to see Watkins walk about among the dogs, handling them, as they surged round him, like so many terriers. I had expected them to behave like the wolves they looked.

This fjord was shut in by steep grassy hills; and at the head of it was the red-painted whaling station giving forth a stench like nothing else on earth. In the harbour were the carcasses of a finnback and two killer whales attached to a buoy, while hundreds of Lesser Black-backed Gulls and Fulmar Petrels fed on the refuse of the station.

Before we left the island we took aboard more than a ton of whale-meat as food for ourselves and the dogs. Some of this was already dried, while some had only just been taken from the carcass. The strips of fresh meat were hung in the rigging so that they could more speedily dry; but unfortunately the *Quest* rolled so much in the next few days that most of the meat had fallen off before we reached Iceland.

For the next few days the weather was very rough and the *Quest* pitched and rolled terribly. Sometimes she would roll over 40°, and the decks would be awash from end to end.

The dogs were on a raised deck amidships, and though the waves swept across their enclosure they did not seem to mind very much. None of them was sick, and their appetites were as good as ever: neither of which could be said of most of us.

On the evening of the 15th we saw the twin pinnacles of the Westmann Islands, and next day anchored in Reykjavik harbour next to the *Bowdoin*, a yacht belonging to Macmillan, the American explorer. Here we bought a few things which had been thought of since leaving London, and made the most of our

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last hot baths and civilized meals at the magnificent new hotel which had just been erected. Then, after coaling once more, Iceland was left behind till only the romantic white cone of Snaefell broke the horizon. On the 19th we met a solitary Aberdeen trawler, and that evening low down on the Western horizon we saw an irregular line of indigo-coloured masses which we were certain was the pack-ice, till we were disillusioned by noticing the same phenomenon in the South and decided it was only cloud.

The next day there were innumerable whales spouting all round us, and when we turned in that evening the more imaginative among us thought we could see the waves breaking on something far ahead. Very early on the following morning we were aroused by something unusual happening outside. The engines would suddenly stop, there would be a few moments of dead silence, followed by a tremendous bump which would ring the ship's bell and almost throw us out of our bunks. We were in the pack-ice at last.

The ocean, as far as one could see, was covered with floating lumps of dazzling white ice of all sizes and shapes. It was not packed very close; and as a rule the Captain, from the vantage of the crow's-nest, could see a lead through and would shout his orders to the man at the wheel. There were seals about too. They would be lying, like gigantic spotted slugs, on the flatter ice-floes basking in the sun, and ready at any sign of danger to slide back into the water.

Curiously enough they did not seem to mind the *Quest*. As we advanced slowly towards them they would sleep for twenty seconds or so, and then, suddenly awaking, raise themselves on their flippers, gaze at the *Quest*, wriggle forward a foot or two only to sleep again. To secure them most accurate shooting was necessary, for unless the seal was killed outright it would slide down into the water. When about half a dozen had been collected by the crew in one of the *Quest's* whale-boats, they would be turned out onto a suitable floe and skinned. It was amazing

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to see in what a short time these skilled men could remove the skin with the two inches of pinkish blubber adhering to it.

On this first day in the pack-ice we accounted for twenty-seven seals. This seal-meat was more palatable than the whale-meat which we had been eating since leaving the Faroe Islands: both are very tender, but the whale-meat has always rather a strong oily flavour, while seal-meat is delicious.

A sealer could be seen working further in towards the Greenland coast, which was now visible as an inspiring-looking row of mountains right across the Western horizon. As the *Quest* approached—fairly rapidly, for the pack was still tolerably open—we could make out huge glacier tongues coming down between the high peaks, some of which had that sharp jagged appearance reminiscent of the Chamonix Aiguilles. But the pale sky and the soft colouring of the mountains seen behind low-lying horizontal wisps of darkish cloud were very different from the deep-blue skies and clear-cut outlines of the Alps. This delicate colouring of the distant land was enhanced by the incredibly vivid blues and greens of those parts of the ice-floes which were beneath the water-line. In the evening there was a low bank of fog ahead, out of which some true icebergs loomed gigantic.

By the following day we were more than half-way through the pack, but just ahead of us it seemed impenetrable. The mountains to the North, and some of the large isolated icebergs behind us, were miraged in the most fantastic manner. An inverted image seemed to be balanced upside down on the peak or berg, for ever changing its shape and shimmering in the haze. Away to the North were some of those enormous icebergs which, after breaking away from the vast North Greenland glaciers, come floating southward in the current, melting more slowly than the smaller pack-ice, till they reach the Atlantic and become a menace to shipping and the admiration of the liner's passengers. When one considers that for every hundred feet above water there are eight or nine hundred below, it is not surprising that so

many ships have been crushed to matchwood in the journey through the pack.

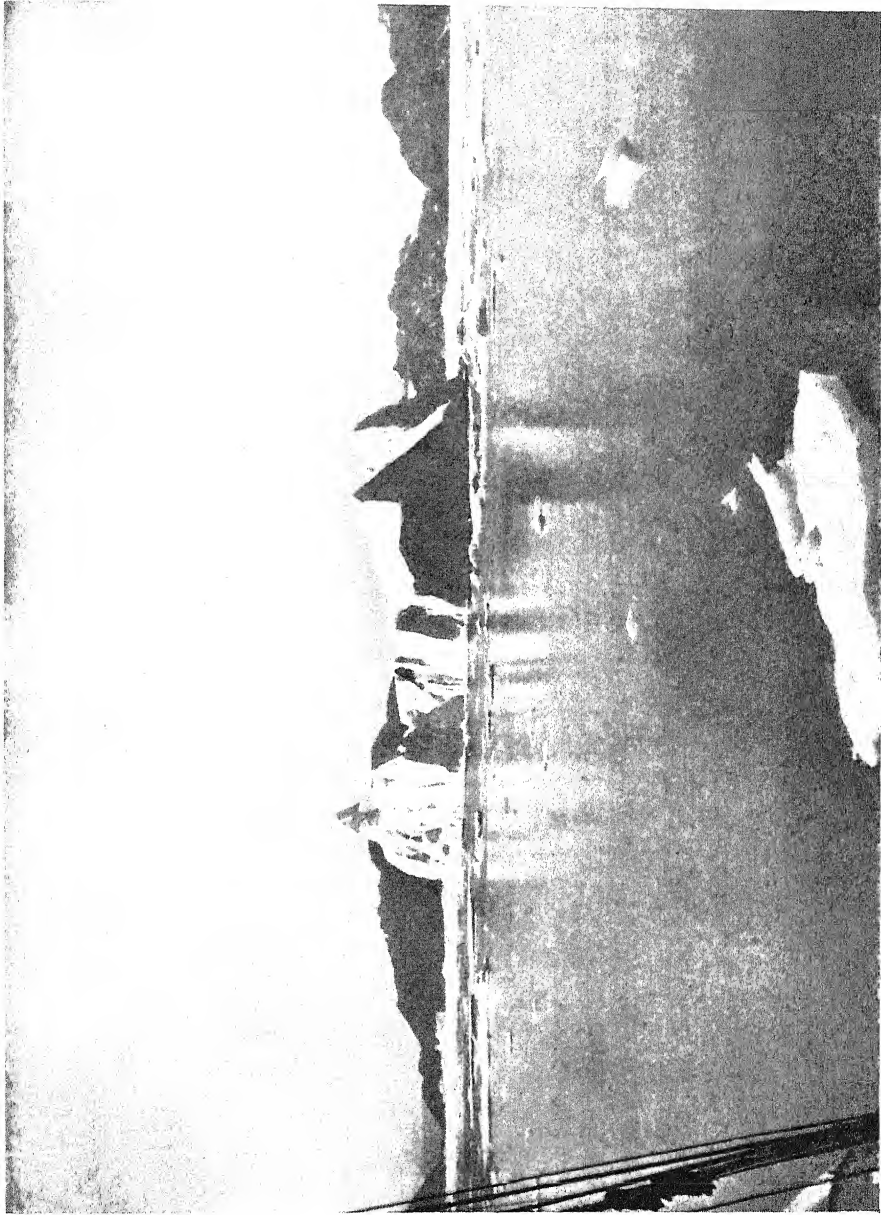
By July 23rd the *Quest* was fairly near the coast, but a closely packed belt of ice-floes seemed to stretch right up to the rocky shore without any suspicion of land-water. There were no leads ahead, and it seemed impossible to penetrate further. However, looking back it seemed equally impossible that the *Quest* could have just forced her way so far.

As soon as we had entered the pack we had seen Long-tailed Skuas and Little Auks, but now, near the coast, we saw birds more associated with land. There were great white Glaucous Gulls flying purposefully up and down the coast, and in the water Black Guillemots swimming and diving. On a small ice-floe was a party of elegant Arctic Terns, their curiosity overcoming their fear till we were almost upon them.

In this thick pack the Captain had to be very careful that the ship's propeller was not damaged by submerged spurs of the ice, on to which the *Quest* would run as she recoiled backwards again and again while trying to force a way among the floes. Sometimes we were unable to advance for an hour or more, and then we could land on some of the large level floes, glad to be able to walk more than twenty yards without having to turn. It was wonderfully warm in the sun and several of us practised, with painful results, cracking the long heavy walrus-hide dog-whips which Watkins and Scott had brought from Labrador.

At last, by sunset, we were through the pack, having taken the wonderfully short time of three days. The *Quest* was anchored near Cape Dan and the Captain went off to try and find some Eskimos who could pilot him safely through the maze of ice-filled straits and rocky islands to Angmagssalik.

Next morning the place seemed alive with Eskimos as the *Quest* steamed carefully up an ice-scattered channel, with dark rock faces rising sharply on each side. Alongside, the Eskimo hunters were paddling their kayaks at furious speed to keep up with us, their deep brown sunburnt faces contrasting pleasantly



ICEBERG SEEN FROM THE *QUEST* WHEN APPROACHING GREENLAND

with their white cotton garments and hats. Every now and then one of them would throw his harpoon with tremendous force in front of him, dexterously picking it up again as he passed. The women, with their amazing top-knots and bizarre clothing, vainly tried to keep up in their large skin-boats called umiaks. On this first encounter we received a high impression of the efficiency and perfection of the Eskimos' equipment, which a more detailed knowledge and first-hand experience were not in any way to diminish.

Of the Eskimos themselves our first impression was of men of small stature with copper-coloured faces, dark lank hair, high cheek-bones and amazingly dirty teeth. They seemed to be extremely friendly, and inordinately fond of tobacco. It rather took my breath away to see them knock the hot ashes out of their pipes into their mouths, and then chew them with evident gusto!

Presently the Danish settlement of Angmagssalik appeared: a scattered collection of about a dozen red and brown wooden houses, roofed with corrugated iron or planks and dominated by two enormous wireless masts. Angmagssalik is the only Danish-Eskimo settlement on the East coast of Greenland, except for Scoresby Sound, much further North, which was colonized from Angmagssalik in 1925.

There are now about seven hundred Eskimos scattered over 50 miles of coastline North and South of Angmagssalik. In addition to the natives there is a Danish storekeeper with magisterial powers, a half-Eskimo missionary, and a Danish wireless operator, with their wives and families.

The Danish Government ship only visits the settlement once a year, thus it was a tremendous excitement for them all to see a strange ship and its still stranger occupants. The women crowded on board delighted with our gramophone, amazed at our clothes, and simply enraptured with the "zip" fasteners some of us had on our jackets. The women were all dressed up for the occasion, and very beautiful some of them looked. They wore bright red seal-skin boots ornamented with a most intricate

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mosaic of different-coloured pieces of seal skin; seal-fur trousers—similarly ornamented down the front; a close-fitting blouse of some bright-coloured material; and above that a most exquisite short cape, of minute beads of many different colours, worked together into a complicated pattern.

After getting as much local knowledge as possible with a view to selecting a site for our Base, the *Quest* set off westward towards Sermilik Fjord. Owing, however, to the thick fog outside the harbour, we had to return to the settlement, where we danced with the Eskimos on the only comparatively flat bit of turf in the district. The music was provided by our gramophone, and the girls danced a furious double time to it which was most exhausting.

Early next morning we again set off to examine the fjords to the West of Angmagssalik. The place for which we were searching had to have many facilities and we could scarcely hope to find them all provided. To begin with, the Base must be in a fjord which contained a glacier giving a reasonable approach to the Ice Cap, for all sledge-journeys other than those on the sea-ice would have to start up this ascent. The fjord must be sufficiently deep for the *Quest* to be able to anchor fairly near the shore; there must be an ice-free bay near the Base sufficiently shallow so that the sea-planes could be beached, yet there must also be a landing-place deep enough to allow the whale-boat, or even the *Quest* herself, to come right up to the shore for unloading. We wanted a pleasant place for the actual Base hut, facing south—to get the most of the winter sunshine—and with running water near by. The wireless operator insisted on the chosen site being open towards the Ice Cap and towards the sea, so that there would be no obstruction to the wireless waves. Finally we particularly wanted to be in a good hunting place, so that we could get fresh food for ourselves and the dogs throughout the year after learning the various hunting methods of the natives.

Sermilik Fjord, where Watkins had originally intended to establish the Base, was found to be full of gigantic icebergs, and

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our later acquaintance with this sinister fjord made us glad to have settled elsewhere. After looking at several places which fulfilled only a few of our conditions, we at last entered the Western branch of a forked fjord about 30 miles West of Angmagssalik. In several places on the North-West of this fjord the Ice Cap came right down to the sea, usually in a turgid ice-fall several hundred feet high. But in one or two places the ascent seemed more gradual. Watkins, Wager and I went up to examine one likely-looking approach. Here all the snow had melted from the ice, leaving a hummocky surface formed of sharp ice-crystals which would soon cut the dogs' feet and wear out the sledge runners. The going seemed to be undulating and crevassed, while farther in it seemed very much worse. The surface, oddly enough, was discoloured by a myriad particles of dust and rotting leaves, blown on to it, presumably, by the winter's gales.

As the *Quest* crossed the fjord to examine a more suitable-looking approach nearer the head of the fjord, we saw many seals in the water, their inquisitive black heads bobbing up on all sides. Some Eskimos brought us a number of Eider and Long-tailed Ducks which they had just got with their bird-spears; while near some low islands a terrific commotion was caused by a snowy white Greenland Falcon being mobbed by a lot of squarkingly angry Arctic Terns for approaching too near the Ternery. It was a blazing hot day, and this enchanting place seemed almost too good to be true.

Towards the head of this fjord was a low-lying rocky island, and behind this a line of small lakes in the hollow of a green valley leading up to a flat-topped mountain, 3,000 feet high, called Sulusuk (the shark's fin). About 2 miles distant, across the Western branch of the fjord, an arm of the glacier flowed down in fairly easy stages between two mountains toward the sea. Unfortunately this glacier tongue lost itself among the hills before it reached the sea, but it seemed as good an approach to the Ice Cap as we could hope for. After two hours' sleep, Wager and I started up the glacier to see if this would be a suit-

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able route for the sledges, while Watkins and Rymill climbed a mountain from which a view could be got over the farther slopes of the Ice Cap.

The result of this reconnaissance was satisfactory, and next day, on a level stony promontory about a hundred feet above sea-level, a position was chosen for the Base hut, ideal in every way except that there was no permanent water-supply for some distance. Three hundred yards away the rocks fell steeply into the sea, making an excellent harbour for landing the heavy gear from the whale-boats. Rather more distant on the other side of the promontory, D'Aeth and Hampton had found a small bay with a shelving beach which would be suitable as a flying base for the sea-planes, except that the South-East winds were gradually filling it with ice.

The dogs were now landed on a small island, and mighty glad they were to be able to run about after their cramped quarters on board.

About this time two of the *Quest's* crew had a very close shave. The second mate and the bo'sun had gone for a row down the fjord in a small flat-bottomed boat. As they were passing a fairly large berg a piece of ice broke off it, so upsetting its equilibrium that the whole berg turned turtle and the boat was swamped. Unfortunately the bo'sun could not swim, and the mate had a Herculean task to support him with one hand, keep hold of the boat with the other, and gradually make his way to a flat piece of ice which fortunately happened to be nearby.

The expedition was now divided into two twelve-hour shifts, and for the next week we worked harder than many of us had ever worked before. To begin with, the planks for building the Norwegian hunters' hut, in which we were to spend the winter, had to be rowed across the two hundred yards separating the ship from our harbour—the *Quest* dare not venture closer—and carried on our backs up the steep slope to where the ship's carpenter and some of the crew were working about fourteen hours a day building the hut. All the personal kit, many of the

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stores, the wireless equipment and the heavy kitchen range and stove had also to be carried up this hill.

The worst part was unloading the coal. First we had to fill the sacks down in the hold, then load up the whale-boats—always a precarious job owing to the erratic nature of the ship's winch—row perilously shorewards probably with only a few inches of free-board, finally, worst job of all, lift the sacks out of the boat on to our shoulders and carry them up the slippery rocks well beyond the reach of the tide. The bulk of the stores, the ration boxes and dog-pemmican boxes, were all stacked on the foreshore, as well as the tins of petrol, oil and paraffin.

All this time we had brilliant sunshine; the only trouble being the mosquitoes and small grey flies whose depredations were confined to the day shift, and then only when the wind was still.

D'Aeth and Hampton meanwhile were rigging the aeroplane, and trying, with dynamite and pickaxes, to remove the ice from the bay where they intended to build the hangar. They nearly removed themselves too, when one of the crew who was assisting dropped the fuses and detonators on to the rocks. They then stretched ropes across the bay to prevent more ice drifting in with the continuous South-Easterly winds.

The floats were rigged and painted next, and with the help of the *Quest's* winch the machine was lowered on to the floats. Unfortunately, owing to the unloading, the *Quest* had a list to starboard, and Hampton found it very difficult to get the machine true. Then to our great amazement the engine started first swing. The Eskimos, who had arrived in boatloads to gape in astonishment at our equipment and doings, were quite dumb-founded, and somewhat frightened by the noise.

A crisis nearly occurred when the sea-plane, complete except for wings, was being lowered into the water. A sudden squall got up, and at the same time a large floe drifted down, threatening to crush the slender floats against the side of the *Quest*. The machine was finally moored to a buoy which consisted of a large

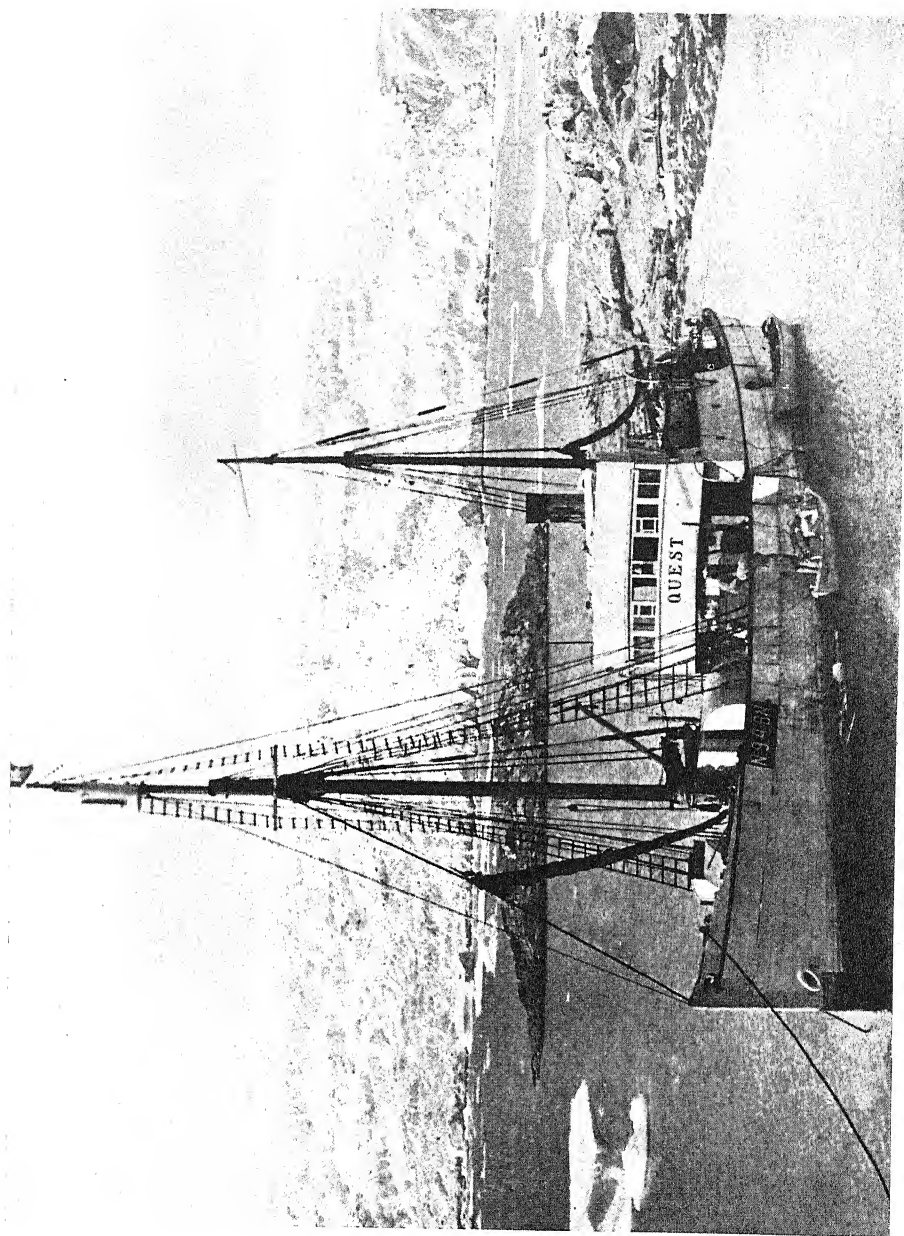
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barrel attached to a sunken rock. The wings were brought over, precariously balanced across two boats, and after a few hours of difficult work trying to check the levels with a plumb-line in a strong wind, Hampton proclaimed the machine ready to fly.

Fresh food was rather scarce at this time as the Eskimos seemed unable to get many seals, and although one had agreed to hunt for us he seemed to be consistently unlucky. However, one day an Eskimo appeared at the Base with a large grin and five fine sea-trout, averaging about 2 lb. He had caught them with his hands in the stream between two of the lakes, and subsequently with our nets we were able to lay in a fair supply. The Captain, who understood the netting of fish, taught the Doctor what he knew of the art. Of course at this time we had only been able to pick up a few words of the Eskimo language, and as they knew no single word of English our communications consisted mainly of signs and pictures.

Meanwhile the carpenter, with the help of anyone available, was erecting the hut with amazing speed, and most of us were engaged on our particular jobs. Lemon was hastily trying to get the portable wireless set in order before it was taken up to the Ice Cap, and at the same time was struggling with the charging motor which would be used at the Base to supply power for transmission, and to give us electric light in the hut. Also, while there were still plenty of men at the Base, we erected the two 70-foot wireless masts. These gave a certain dignity to the now almost completed hut. Riley was busy setting up his various meteorological instruments, and looking after the boats; while Wager was ranging far over the country collecting rucksacks-full of geological specimens. Rymill and I spent several days sorting out and oiling the thirty pairs of skis, and fixing Alpine bindings for use on the Ice Cap while it was still warm enough to wear leather boots.

Scott had built a wire-netting pen where the dog food was to be kept. There were bales of dried cod, sacks of capelin and, hanging on wires to dry in the sun, about a ton of whale-meat.



THE *QUEST* UNLOADING STORES IN THE BASE FJORD

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He also had, anchored in the water, three huge barrels of seal's blubber which would come in useful for the winter. Owing to the smallness of the Base hut most of the equipment had to be left in the open, with a tarpaulin above it against the rain. We were still enjoying the most marvellous weather, and working in the brilliant sunshine wearing only a shirt and trousers it was hard to believe we were really in Greenland. As we worked we could usually hear only the buzzing of the mosquitoes, and across the water the dull roar of the glacier streams pouring off the ice. Then, suddenly, there would be a noise like thunder as a vast lump of blue ice as big as the Base hut fell with a mighty splash off the glacier wall, or a stranded iceberg in the fjord collapsed and rolled over, setting up waves which would make the *Quest* herself rock like a dinghy.

By the beginning of August the Base hut was nearly completed. The walls consisted of two layers of match-boarding with wind-proof felt between, and on the outside was a second layer of thicker felting. Inside was a living-room 20 feet by 12 feet with rows of bunks along each side. Between this and the combined wireless room and workshop was a small kitchen and still smaller darkroom. The entrance to the hut was by a vestibule in which the charging motor was kept. Above was a long loft in which all our personal possessions were stowed. Crowds of ragged Eskimo girls and women—for the neighbouring settlement seemed to be very poor—came to watch us working, and to search among our refuse for tins and other oddments which would be of value to them.

On August 3rd the Moth was ready to fly, so D'Aeth and Hampton went up for a trial flight. Considering the trying conditions under which she had been rigged it reflects considerable credit on Hampton that no adjustments were necessary. Captain Schjelderup was very excited during these preparations, and flew all the ship's flags in the Moth's honour. The Eskimos were of course enraptured, involuntarily emitting a drawn-out chorus of wonder. Some of them remembered having seen an

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aeroplane previously, when a machine called at Angmagssalik during the American World Flight of 1925.

D'Aeth then flew Watkins over to Angmagssalik to make certain arrangements, and to obtain as much local knowledge as possible before the various journeys started. Next day, after a rack for photographic plates had been fitted in the front cock-pit of the Moth, she was flown over to Sermilik Fjord to start the series of aerial photographs. Unfortunately the fjord was full of heavy white fog, so D'Aeth returned and flew Rymill up to examine the approaches to the Ice Cap.

On the same day Watkins, Scott and I took fourteen dogs and a couple of sledges to flag out a route as far as possible through the crevassed and steep marginal area of the Ice Cap. To begin with, all our sledges and gear, and the dog-pemmican we were taking up to aid the forthcoming sledge journey, had to be carried on our backs up three-quarters of a mile of the roughest going imaginable. First, there was a flat stretch with huge scree-boulders and loose stones; then a series of steep slopes of naked rock which brought one to a height of about 700 ft.; finally a short and difficult descent over steep loose scree on to the ice.

The glacier here was undulating, covered with small hummocks. It was very slippery and consisted of hard bottle-green ice which would soon cut the dogs' feet. Unfortunately Scott, never much of a mathematician, now discovered he had brought only fourteen boots for as many dogs, so only three of them could be completely shod. I was therefore left to look after the camp and the other dogs while Watkins and Scott went on.

Two miles of this fairly gently sloping ice, which was comparatively free from crevasses, though very uneven, led one to a serious obstacle in the form of a smooth and glassy ice-slope, so steep that it was almost impossible to scale it without the aid of an ice-axe and crampons (metal spikes attached to the sole of the boot). This ice-fall, which was to become a menace to every Ice Cap journey in turn, was named Bugbear Bank, and well did it live up to its name.

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Above this slope Watkins and Scott found that the crevasses got very much worse. They reached the head of a long narrow nunatak (a portion of land surrounded by glacier) running a few miles into the ice, but beyond that there seemed to be no way of advance. One of the dogs fell through a hidden crevasse here, but was recovered in spite of the harness breaking.

Down at the camp my boredom was relieved by the Moth flying over and dropping a note, and then in the evening I saw the sledge party returning. Down Bugbear Bank they had to go with extreme caution, but once they were past this their speed was unbelievable. Not having seen dog-sledging before I had no idea a sledge could go so fast. Their three dogs had seen the other dogs at the camp and were coming down the hill at full gallop. Both men were sitting on the sledge as it bounced and crashed over the hummocky ice, at any moment threatening to overturn, till with a final spurt they reached the camp.

Next day we returned to the Base, where there was bad news awaiting us. Hampton had discovered that De Havillands had failed to put in the ski undercarriages, without which winter flying would be impossible, and a large proportion of the expedition plans would have to be abandoned or largely modified. Watkins immediately wired to De Havillands asking them to send the required parts to Reykjavik, and to charter the *Quest* while she went to Iceland for them and back again to the Base, and this they promptly agreed to do.

We were now daily expecting the Danish ship *Gustav Holm* to come in, bringing the rest of our equipment. Meanwhile a considerable amount of flying was done. D'Aeth took the Captain up in the "Fly", as the latter called it, and did some stunts with him; then on August 8th D'Aeth and Watkins were away for almost two hours taking aerial photographs of the coast north of Angmagssalik. From this it was seen that the existing maps were very inaccurate as to detail. D'Aeth also took Scott up to examine the sledge route to the Ice Cap. From above he could see that the crevasses were worse than we had expected, and that

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the flagged route which he and Watkins had made led towards the most heavily crevassed area. The ice was very thick in the fjord just now, and D'Aeth had to land about 3 miles away from the Base, in the only open stretch of water available. After landing, the ice started to close in, and he was forced to break through to avoid being crushed. Luckily the floats had fairly solid bumpers on their bows and no damage was done. The dinghy with its outboard motor soon appeared and the Moth was towed safely home. This dinghy was somewhat unstable, and once when Lemon was towing the aeroplane the cable touched the plug of the outboard motor, giving him such a shock that he all but upset the boat.

On August 9th, at 1 a.m., the *Gustav Holm* entered our fjord. It was an impressive sight in the dim morning light to see the silhouette of this elegant four-masted sailing ship, silently advancing between the white ice-floes to anchor beside the *Quest*. As she could only stay for a few hours we immediately set to work to unload her. The other aeroplane, still in its crate, was towed round to the hangar bay; the rest of the food boxes and petrol barrels were put beside the others on the foreshore; and the *Gustav Holm*, fearful of the ice, went hurriedly back to Denmark.

And now that the building of the Base hut was finished and the stores all neatly stacked on the foreshore, the work of the expedition was about to start. A sledge party under Scott was to go up on to the Ice Cap to establish the meteorological station when they got to the highest point. Rymill, Bingham, Riley and Lindsay were to accompany him. Partly because the loads would already be quite heavy enough, and partly because Lemon had had some trouble with it, the wireless set, originally intended for the Ice Cap station, was left for a later journey. Lemon was to be left alone at the Base to get the wireless sets working and to keep the meteorological observations. The rest of us, meanwhile, were to go Northward in the *Quest* to map the coastline between our Base and a large fjord called by the natives Kangerdlugsuak.

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By August 10th everything was ready for these journeys to start. To begin with, the twenty-eight dogs for Scott's journey had to be caught: not any twenty-eight dogs, but four complete teams. The dogs had from the first kept very much to their own families, a group of six or seven uniting under one especially strong dog who would periodically subdue his team one by one. A few independent or unpopular dogs were left out of this clan-nishness, but the majority were so divided up.

At first, as we invaded their island with a bag of seal-meat held aloft, it was easy to beguile and catch them, but soon they saw what was happening and many of the wilder dogs retired to the farthest parts of the island, standing belly-deep in the water growling at us as we waded in after them. Those that we had already secured in the whale-boats would often leap out into the water to rejoin the rest of their teams, who might be still on the island.

One extremely highly-strung dog, after snapping at everything that came within reach, eventually tried to swim for the mainland, and only by rowing our hardest could we prevent him from reaching the land where he might have done immense damage and eluded us for weeks. Suddenly, as we had got most of the required animals on to the whale-boats and only the carpenter (to his great amusement) had been bitten, the other dogs on the island decided unanimously that they would like to follow, and all started swimming out after the whale-boats. Most of them landed on an ice-floe which happened to be floating near, and as the *Quest* towed our boatloads of dogs across the fjord we saw these dogs still shivering on the floe.

The *Quest* anchored near the portage to the glacier and the rest of the day was spent by all of us in carrying load after load up this wearisome slope. As some of the paraffin cases weighed 80 lb. or so, and the ration boxes and dog-pemmican cases about 50, this was most gruelling work. So steep were some of the rock slopes that they had to be climbed on all fours. Everyone slept on board the *Quest* that night, after a farewell party, and at

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six o'clock next morning a final load was carried by all hands up the moraine, and the four sledges were lashed up ready for a start. Then, with urgent cries of "damma damma damma" and much cracking of whips, Scott's party left for the Ice Cap, and the rest of us returned to the *Quest*.

Already this morning there was a layer of fresh ice on the more sheltered bays of the fjord, and the Captain was fretting to be away northward before the weather changed.

CHAPTER II

The Kangerdlugsuak Coast Journey

IN the region of our Base the Greenland coast runs roughly east and west, but once the ice-beset Cape Dan has been rounded it again resumes its northward trend. The maze of rocky islands and deep fjords to the north and east of Angmagssalik Island gives way to a barren stretch of coast where often for miles on end the great glaciers from the Ice Cap beetle over the sea. This unfriendly and dangerous coastline is broken in Latitude $68^{\circ} 30'$ by a wide and many-branched fjord called by the Eskimo Kangerdlugsuak. Owing to the ice which was always found to be packed closely in the mouth of this fjord, no ship, other than native craft, had ever been able to penetrate beyond the entrance.

Watkins' plan was that, as soon as the Base hut had been erected and the sledging party had started up the Ice Cap, the *Quest* should go right up to Kangerdlugsuak and try to force an entrance through the ice. Depôts of food and fuel would be left at intervals on the way, and eventually four of us, working from a small boat with an outboard motor, would leave the *Quest* after mapping Kangerdlugsuak, and survey the whole stretch of coast back to Angmagssalik, picking up the depôts on our way down. From suitable bases on the way up the sea-plane would make flights for the purpose of taking aerial photographs of this complete strip of coastline. A combination of the photographs and the ground survey would, it was hoped, produce a tolerably accurate map.

The original plan was that after the boat party had started southward from Kangerdlugsuak, the *Moth* should fly straight back to the Base, and the *Quest* return to Norway for good: this

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would be round about September 1st. It was quite possible that, if the ice conditions were bad, or if the small boat got frozen in by the newly formed ice or indeed met with any accident, the boat party might have to wait until the sea-ice was firm enough to enable them to walk back to the Base or to the nearest Eskimo settlement.

Although sealers working in the pack had obtained occasional glimpses of this coast it was not till Amdrup and I'jnar Mikkelsen did their memorable journey by boat in 1900 that anything could take the place of a dotted line on the map. Amdrup's ship, the *Antarctic*, working down from Scoresby Sound, reached Cape Dalton; and being stopped there by the ice, returned, leaving Amdrup and Mikkelsen to continue southward to Angmagssalik—a distance of at least 400 miles, even if they were not to follow the multitudinous deviations of the coast. The *Antarctic* meanwhile, after completing her work off Jameson Land, returned via Iceland to Angmagssalik to pick up the boat crew in the following year.

This journey was an amazing achievement: and though Amdrup was unable to enter Kangerdlugsuak and other fjords we found that his map was, in the main, wonderfully accurate.

After we had said farewell to Scott's party, the *Moth*, with its wings folded, was hauled on to the deck, and the *Quest* started for Angmagssalik with eight of us on board. Now for the first time since we had reached Greenland it started to rain, and we realized how extraordinarily lucky we were to have had fine weather while the hut was being built and all the work of unloading was in progress. In spite of fog, which made the crossing of the mouth of Sermilik Fjord somewhat exciting, we reached the settlement on the evening of August 12th, finding the ice conditions quite favourable.

When we started northward on the next day the *Quest* looked most comical. Some of the Eskimos who had spent the summer at Angmagssalik were returning—now that "the season" was over—to their scattered winter-houses farther north, and in exchange for the services of some of the men as pilots we were

THE KANGERDLUGSUAK COAST JOURNEY

helping them to move house. On the bows of the *Quest* was a miscellaneous collection of umiaks, kayaks, Eskimo seal-skin tents, dogs and children, while the men and women wandered about the decks examining with naïve curiosity everything that was strange to them.

The weather was ideal again as we kept inside the outer belt of islands, working our way through a maze of ice-filled straits with high rocky islands on each side. Soon we passed the island named after Eric the Red, who is supposed to have discovered it when he came over from Iceland in the ninth century. It was then that he named this new country Greenland, because Iceland had suffered undeservedly owing to its forbidding name.

There were hundreds of Kittiwake Gulls here flying in endless line up or down the coast and settling in crowds on the ice-floes. We saw several whales; on one occasion five spouted together quite close to the ship. The temperature now was about 42° in the shade, but each day it was falling slightly. If the boat journey was to be completed before the winter weather set in we would have to hurry.

It was wonderful to have some spare time after the frantically strenuous work at the Base; and we could enjoy the sunshine on the deck of the *Quest*, gazing at the wonderful scenery and wondering how we could best map this complicated system of fjords and islands.

Soon we reached the most Northern of the winter settlements and landed the last family of Eskimos, though our chosen pilot remained with us. Their dogs were still here, running loose on an island where the wretched animals had been since their owners had abandoned them in the early summer. They had a certain amount of blubber to eat and could catch, in the seaweed and pools left by the tide, a kind of bony sea-scorpion called by the Eskimos "keewarkee." The stone winter-houses were in a filthy state, with half-chewed bones and other refuse left lying since the previous winter. The oldest Eskimo woman showed me with great pride a store of meat she possessed, cached in a stone en-

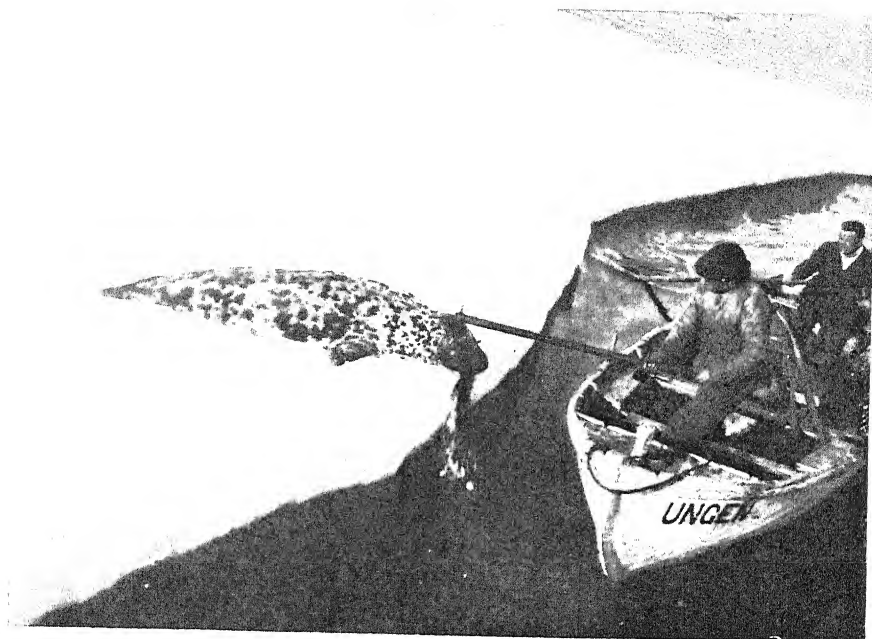
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closure: there were several seals with the blubber still attached, to which adhered hundreds of large bluebottle corpses. Under some stone cairns near by were some greasy-looking seal-skin bags, probably containing the leaves of a certain edible stonecrop (*Sedum roseum*), pickled in seal-oil.

We wanted to do some aerial photography at this stage, but the open sea was nowhere sufficiently clear of ice to allow the sea-plane to take off and land again with safety, and it became clear that we should have to operate from the shelter of a fjord.

On August 14th we entered the fjord Kangerdlugsuatsiak, which, being similar in shape but considerably smaller than Kangerdlugsuak, is called by this diminutive of the same name, in latitude 66° 20' N. At the entrance we saw cairns built by Amdrup, who had not been able to map the interior or inland section of the fjord. It would greatly accelerate the return boat journey if we could map as much as possible of the interior of the fjords on our way up the coast, while we were still searching for a flying Base, so we decided to start our survey in this fjord.

The scenery here was magnificent. A short branch fjord to the North terminated in a huge glacier, while the longer main fjord was flanked by great needle-peaked mountains six or seven thousand feet high. There were hanging glaciers precariously balanced on the steep hillsides, and other glaciers coming right down to the sea. At the head of the fjord, away in the distance, was a superb pinnacled mountain reminiscent of St. Paul's Cathedral; this was Ingolfs Fjeld. In spite of the tears of his wife and family we had retained our Eskimo pilot, a long-haired, moustached man, who all the way up the fjord had been telling us with excited gestures about some kind of edible plant growing at the head of it. As soon as we anchored, by a wide glacier with parallel moraine deposits running down it like gigantic railway lines, the Eskimo took us to a near-by place where grew *Angelica* (*Angelica sylvestris*), a large umbelliferous plant about 2 feet high, with hollow stalks and serrated leaves. This apparently was a much-prized delicacy, having a powerfully aromatic flavour which



(a)

COLLECTING A SEAL SHOT FROM THE *QUEST*



(b)

ESKIMO WOMAN SKINNING SEALS

THE KANGERDLUGSUAK COAST JOURNEY

I found very pleasant. There were also masses of black crowberries (*Empetrum nigrum*) growing here, which were very refreshing to eat though a trifle insipid in flavour.

Meanwhile Stephenson, helped by Courtauld and myself, had started the mapping. We made our way from point to point in the boat with the assistance of the outboard motor. At first we tried to measure distance with the automatic log, but owing to the extremely devious course we were forced to make among the ice-floes this was found to be useless, and distances were hereafter measured with a Barr & Stroud Rangefinder. The actual mapping Stephenson did with a plane table, while Courtauld and I fixed points by theodolite.

We had a very narrow escape with the Moth about this time. While the *Quest* was still in Kangerdlugsuatsiak, a stretch of open water at last appeared which seemed suitable for the sea-plane to use as a Base. D'Aeth took off successfully, with Watkins to take the photographs. After an absence of about an hour they returned, to find that, owing to a change in the tide or wind, the ice had closed in and there appeared to be no safe landing-place. Even a small piece of dark ice which might be almost invisible from above would be enough to wreck the fragile floats. At last, after circling round for some time D'Aeth saw a small lane of open water, and with good fortune and skill succeeded in landing the Moth without damage.

After leaving another depôt for the return journey, and having completed the survey of the fjord, the *Quest* ran out to the open sea to continue northward. From the aeroplane we had discovered that there was fairly open water all the way to Kangerdlugsuak, and the Captain, at first sceptical, was now wildly excited. While we were inside the fjord, in spite of the ice which usually acts as a blanket on the waves, there had been a considerable swell for some time, so that it was often impossible to land the surveying instruments from the boat which, with the ice, would continually rise and fall three or four feet at a time. The Captain had realized from this that there must be a very heavy swell

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outside, and sure enough, soon after we had got beyond the fjord-mouth, there was every appearance of a storm coming up.

Usually the *Quest* had anchored from 9.30 p.m. till 2 a.m., when it got too dark to make out sunken rocks and hidden dangers ahead; but now, with violent gusts of wind and rain heralding no common storm, the Captain boldly smashed through the ice in the half-light with his engines at full speed. It was on such occasions that Captain Schjelderup—who always donned his bowler hat when things became really serious—seemed to be enjoying himself to the full. Leaving things in his safe keeping we turned in, some of us at any rate having done about sixteen hours of work in the day.

Next morning (August 16th) we awoke to find ourselves at the head of a fjord which seemed to be packed tight with ice. The Captain had run into the fjord, which was not even marked on the map, to shelter from the storm, and here all was tranquil. At the head of the fjord a river about 15 yards wide flowed out over a sand-bank. At the river-mouth the Captain and the Eskimo were netting salmon which were so abundant here that from the crow's-nest of the *Quest* the sudden silver glitter of their scales could be seen in almost every part of the fjord. The river, which was an ideal salmon river, flowed from a lake about 3 miles long, which was separated from the fjord by a line of foothills. About this time our Eskimo pilot, who had left his seal-hunting apparatus behind him, was so ashamed of himself that he suddenly decided to return to his home 60 miles South and get them. When we passed his winter-house a month later, we called in to inquire for him and were amazed to find he had not returned till September 11th. Where he had been meanwhile we never discovered. This lake was a great boon to the flying-men, and they decided to use it as a base as soon as the *Moth* could find any open water in the fjord on which to take off. I walked round this lake, and suddenly came upon four Barnacle Geese which flew cackling across the green water. On the steep banks of the lake, below the glaciers which hung only a few hundred feet above

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sea-level, I found many beautiful and rare flowers: whole banks covered with nodding harebells; thick masses of the large-flowered alpine willowherb; several kinds of saxifrage, and a great profusion of juicy berries which could be gathered by the handful.

Two good flying-days were needed to bring the aerial photography up to date; and as we might have to wait a week or more for them Watkins decided that Courtauld, Stephenson, Wager and I, who were going to do the final boat-journey, should make a preliminary trip now, mapping the coast as far south as we could, till we should hear the hooter of the *Quest* as she made her way northward.

We left the *Quest* at the head of Lake Fjord (as we named it) late one evening to camp as near the mouth as possible. The ice was so thick, however, that we were very soon in difficulties, for manœuvring a sixteen-foot boat in such ice is one of the most exciting pastimes I know. The ice was of all sizes and shapes; level or slightly undulating floes, an acre or so in extent, would be pressed tight up against great masses of glacier ice which towered level with the crow's-nest of the *Quest*. Naturally from the boat it was possible to see only a little way ahead, and we would often find ourselves completely cut off and forced to go a long way in the opposite direction to escape at all. For instance Courtauld, who ran the outboard motor and steered it with great skill, would pass between two floes making for an open stretch of water on the far side of which there appeared to be an exit. As we got near this gap, however, it might close up, or there would be hidden projecting portions of the floes stretching right across the gap only a few inches below the water. He would then throw the motor into reverse, while the rest of us waited in the bows with oars ready to prevent any too violent contact with the ice. By the time we had retraced our path to the opening by which we had entered that too would probably have closed up and we would have to circle round hoping for another gap to appear. If the ice continued to hem us in, leaving no means of escape, we would have to get block and tackle ready to haul the boat out on to a floe

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should it be necessary; for once it got between two converging floes it would be crushed like a walnut shell.

This was our first experience of really thick pack-ice, and we were glad that the *Quest* was at hand should the boat get nipped. At last, after circling about for some time and trying one way after another, we found it was impossible to cross the fjord and decided to camp wherever we could land. The next trouble was to find anywhere flat enough to pitch our tents; for the land came so steeply down to the sea that often for miles on end it was impossible to land at all. At last we found two heathery ledges about 30 feet up a steep slope, and after laboriously passing up our equipment we succeeded in putting up the tents.

On these journeys, for breakfast and supper, we would have porridge and a mug of tea, augmented by anything we could shoot or catch, while at midday we had chocolate and a ship's biscuit. On this occasion we fried some salmon, and although it was almost midnight we could cook and eat it in the open. It was an infinitely beautiful night as the moon rose in a cloudless sky over the remote snow-capped peaks. The ice alone moved continuously below us, making irregular muffled noises. Otherwise the tranquillity of the scene and the silence were unbroken.

Next day the ice once again prevented us from reaching the opposite side of the fjord, but we succeeded in landing on a small and precipitous island—which we named Ailsa Island—and from here we could get a good view up and down the coast. Even from the summit of this island the ice looked to be packed so closely that there seemed to be no way of escape.

It was not very easy to secure fresh meat, although there were plenty of fjord seals about. It is very difficult to shoot the small dark head from a moving boat—for that is all one sees as the seal inquisitively gazes at any intruder; and if the motor were shut off we would soon be overtaken by our own wash, making the boat still more unsteady. One day we found a large bladder-nosed seal basking on an ice-floe. We managed to get quite near to it and I hit it with my .256 Mannlicher Shoener rifle. Unfortun-



THE COAST BETWEEN KANGERDLUGSSUAQ AND CAPE DAN

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ately the impact of the shot made it slide down into the water and we saw the large spotted grey body, representing weeks of food, sink gently just out of reach. However, I had secured quite a number of Ptarmigan and some Black Guillemots. Ptarmigan shooting was wonderful sport. I used an old single-barrelled .410 which I had bought for ten shillings years before. Sometimes I would hear the old cock bird crowing, and then see him sitting on a stone; but more usually the whole covey—for they were in family parties at this time—would lie low, and their brown mottled plumage rendered them completely invisible till they got up with a whirr at my feet. Then one would have to be extremely quick to shoot one before it got out of range of the small gun. Often by stalking a covey from place to place I would get four or five in an evening, but even if I marked them down I could rarely see them till they actually got up, so perfect is their camouflage.

It was wonderfully warm on the rocks in the daytime, but as soon as the sun set the sea would start to freeze over, when it was sufficiently still, in exquisite star-shaped crystals. Then it would become bitterly cold sitting in the open boat, though we would usually be kept pretty busy bailing; for the boat we were using was an ordinary clinker-built English boat, and not having been made especially strong for the ice, it was already leaking badly.

It was very difficult to find a suitable place for our tents and for the boat at night. The cliffs of bare rock fell at a very steep angle two or three thousand feet to the sea. This rock formation was of grey gneiss crossed frequently by wide dykes of chocolate-coloured basalt. Often we would have to cruise along for several hours before we could find a suitable camp-site. Sometimes our tents had to be pitched on a precarious ledge a hundred feet above sea-level; and it was a difficult matter to get all our equipment up the steep rocks to the ledge. But the most difficult task was the mooring of the boat: if we were to leave it on the open coast it would almost certainly be crushed by ice-floes sweeping past in the night. What we wanted was a small sheltered inlet across which we could tie the boat with ropes, but even in this case both

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sides had to be climbable, otherwise we would not be able to secure the ropes and return to our camp.

The actual mapping was often very exciting. On one occasion we found a branch fjord curving back, only separated by a low col from a larger fjord further south. We thought at first we had discovered a huge island. It was here that, leaving our camp in the early morning, we were stopped by fresh ice almost three-quarters of an inch thick which cut great lumps off the bows of the boat. After finding another way round, a fresh obstacle stopped us. For several miles ahead of us Steenstrup's glacier projected right out into the sea, ending abruptly in great blue walls of ice two or three hundred feet high. Here the whole surface of the sea was covered with small chunks of brash-ice varying in size from three-inch cubes to pieces the size of a football—as well as the actual floes, of course, which were still present. This brash-ice stretched as far as we could see, and it was useless to try to avoid it by running out to sea. We had to push through it with the motor full speed ahead, often making no headway for minutes on end.

The propeller of the motor is so fashioned that if anything hits it the sheer pin will break before anything more serious happens. The drawback to this is not only that it takes several minutes to haul the motor aboard and replace the pin, but that the moment the pin breaks the steersman has no power over the boat at all, and owing to this we had already had several narrow escapes from ramming ice-floes when moving at full speed. In this brash-ice, with lumps of ice continually passing below and on each side of the boat, the sheer pin was continually breaking and causing delay after delay.

At last we ran out into comparatively open water and soon saw the cause of our late troubles. At the top of a projecting tongue of the glacier was a huge green cave in the ice, and pouring from it with a roar an intermittent stream of small pieces of ice which splashed into the water a few hundred feet below. Presently, as we watched, a piece of ice as big as a house crashed off the

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glacier, sending out waves which made our boat rock like a cork. Then to our joy, for it was a spectacle far beyond the description of words, the whole roof of the cave crumbled in and, with a shower of debris and powdered ice, poured into the sea.

We then had to find a camp-site, and after searching in vain for some time we at last saw two islands among the ice out in the middle of the fjord. The sea was freezing over and the ice-floes were very closely packed together, but we reached the islands and camped on a level stretch of heather. The sun set at the head of the fjord behind a wide glacier which, curving down from among the pyramid-shaped mountains behind, looked with its parallel moraines like a huge arterial road swinging mysteriously up into the unexplored hills.

Near our camp we found Eskimo remains, the first we had seen since Kangerdluguatsiak. On the highest point of the island was a stone fox-trap, and in a sheltered place the remains of a small winter-house which had since been tenanted by Ptarmigan whose feathers and droppings were thick on the floor.

When we went down to the boat on the following morning we found that it was more than half-full of water—an almost everyday occurrence—and even the survey and food boxes up on the thwarts had got wet. It was rather important that we should get Time Signals on that day, and we were afraid that the small wireless set we carried might have been damaged by the water. However, we rigged up the aerial across two oars and soon got the Rugby Time Signals.

We had arranged with Watkins that, after the two days' flying had been done from Lake Fjord, the *Quest* should pick us up at some conspicuous headland, and that if we had gone north of Cape Gustav Holm we must leave a message there in a cairn. This Cape was at the northern point of the fjord we were now in, but the ice looked so thick between us and the Cape that we were afraid we might be unable to reach it.

We had successfully reached a survey point about half-way across when the boat suddenly ran on to a submerged rock. We

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pushed her off with such vigour that she ran backwards on to another hidden rock and broke the propeller-shaft casing, thus putting the motor completely and permanently out of action. We were now separated from Cape Gustav Holm by 2 miles of the most impenetrable pack-ice we had yet seen: looking down on it from above there was no water visible between the floes. Unfortunately one oar had been swept away during the night, and our only means of propulsion were an ice-axe, a floor-board and the remaining oar. It took us four hours of the hardest work imaginable to cover that 2 miles; and the ice-axe proved to be by far the most useful instrument. Most of the time we were walking on the precarious ice-floes trying to force them apart to make room for the boat. At last we reached the massive headland of Gustav Holm, only to find it apparently completely devoid of camping-sites. Finally a small ledge was found 200 feet above the sea, which, if built up with stones and sods, would just accommodate our tents as long as there was no wind. We spent the afternoon as we liked, as there was nothing to do till the *Quest* arrived.

When we collected in our tent for supper Wager was excited because he had found sandstone and limestone containing fossils among the lavas at the top of a neighbouring mountain, and I because I had seen a Greenland Redpoll and found masses of lush dandelion leaves which made a most delicious spinach. It was lucky that the tent was of a reddish colour as this hid the fact that the Black Guillemots we were living on were usually rather less than half-cooked.

After one of those long discussions—on the reasonableness of mountaineering I think it was—which are, in my opinion, one of the most attractive parts of an expedition, we turned in wondering when the *Quest* would arrive. We had not to wait long. At about 2 a.m. we heard her hooter to the south, and answering with three rifle-shots we packed up all our kit and were ready in our boat when the *Quest* hove to. They had had two ideal days for aerial photography, and had made several exciting discoveries of new islands and unmapped ranges of mountains.

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After leaving another depôt we pushed on northward through the ice, for the Captain was beginning to worry about the lateness of the season. Heavy rain came on accompanied by a strong wind, and we of the boat party were more than grateful that we were not still perched up on the exposed face of Cape Gustav Holm where, in such a wind, our tent would soon have been blown down into the sea.

The Captain decided to shelter from the storm and await daylight in a small cove behind an island, where a waterfall poured into the sea. Suddenly, just as the mooring was almost completed, one of the hawsers snapped, the propeller grated with a loud rasping sound against a rock, and the *Quest* was aground. It was a memorable scene: the rain coming down in torrents; the Captain in his bowler hat rushing round giving orders and shouting what sounded like "to hell with the propell!"; the boatswain in a dinghy frantically casting the lead and shouting in stentorian tones "one fathom! two fathom!" and the sea vividly phosphorescent in the darkness. At last the crew got her off—which was lucky, seeing that the tide was on the ebb—and all was quiet once again.

On August 22nd the ice was so thick that the *Quest* could make no headway and even had to turn south to escape from the maze of ice. Captain Schjelderup decided to run out into the open sea and go straight up to Kangerdlugsuak, as the ice-belt, though dense, was not wide, and we had every hope of entering the fjord. We were soon on the outskirts of the pack, where there was a great swell running. The sea was covered with small brash-ice with a few larger floes scattered about. It was a most strange sight to see all the ice moving up and down with the swell, and to see the waves breaking against the larger bergs, throwing up spray as high as the masts of the *Quest*. The change was so great after the tranquil seas we had been experiencing near the coast, where the pack acts as a blanket on the waves, that almost everybody succumbed. In the middle of this there was a sudden scare that the sea-plane would be damaged by the icebergs which frequently swept the sides of the *Quest*. The *Moth*, with its wings folded,

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was kept across the deck, which was so narrow that the tail had to be left projecting over the side. In spite of the fiendish way in which the *Quest* was plunging and rolling over at an absurd angle, we all had to turn out and help Hampton to remove the tail.

We went a long way in the night, right up to Aggas Island, meeting two Norwegian sealers who had not done very well and were reduced to fishing for sharks. We had been in wireless communication with the Base so far, but on this day we had a message from Lemon to say that his charging motor had broken down, and that he would not be able to send any more messages.

On August 23rd we were off the mouth of Kangerdlugsuak. Watkins and I climbed a hill, and from the summit got an unobstructed view right down the fjord. It was an exhilarating thought that we were the first white men ever to behold that view. We saw a many-branched fjord about 5 miles wide, flanked by enormous snow-clad mountains, leading up to the largest glacier we had ever seen, whose terminal ice-cliffs, several miles wide, projected far out into the water. Behind that again the Ice Cap stretched away to the horizon.

On the ship's wireless we heard that night the amazing news that Andrée's remains had been found by a Norwegian ship on White Island, and there were many conjectures as to what accident had befallen his party.

On August 24th the *Quest* steamed straight up the middle of the fjord and cast anchor in a bay at the north-west corner. Although there was not enough ice to obstruct the *Quest* we found the fjord unsuitable for flying as there was always a certain amount of brash present. On the way up we saw innumerable seals, many of them with characteristic inquisitiveness supporting themselves on their flippers and raising their heads far out of the water to gaze at so unusual a sight. There were narwhals too: we saw their pale-grey backs as they basked in the warm water near the surface. The Captain and mate went out in a whale-boat to harpoon one, for their single spiral tusk of ivory is of considerable value. But the whales sounded before they got within range.



THE *QUEST* IN BRASH ICE. LOOKING OUT TO SEA FROM THE HEAD OF KANGERDLUGSUAK

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There was a sandy beach near the anchorage and on this there were fresh tracks of Polar bears and foxes. The Captain set his wooden traps which caught the fox cubs alive. We already had several which he had trapped earlier running about on deck: delightful little grey furry animals with shy playful ways. In this bay I saw several Sanderling, the first I had seen in Greenland, and a pair of Ringed Plover. An old Raven croaked in the hills.

From the top of a hill which we all climbed, we could see right over the glacier, the surface of which was a network of crevasses impassable at this time of the year. At the foot of this hill, in a sheltered place, we made a depôt of forty sledging boxes and an equivalent amount of dog food and paraffin; and then covered it all over with a cairn of heavy stones to protect it against the bears. This depôt would be available for sledge-journeys coming up via the Ice Cap from the Base in the following Spring.

It was most important that some more aerial photography should be done while the clear weather lasted, so at 4 a.m. on the following morning the *Quest* went out on its usual task of finding an ice-free bay, while Courtauld, Stephenson and I were left with the boat to map the fjord. The newly formed ice on the sea was too thick for us to force the boat through without damaging it, so we filled in time by taking an azimuth observation, hoping that the ice would soon melt when the sun rose higher. There were several large areas here where the brash-ice had been frozen into a solid mass by the new ice, and upon this the sun had no effect.

Stephenson had measured a small base with the rangefinder and had fixed a point from the two ends. Thus by criss-crossing up the fjord he would get a good plane-table map. Soon after we had started—wondering when, and under what circumstances, we would again be at the depôt—I was looking out for birds when I saw a long way ahead a yellowish-white object swimming in the water. It was producing too much wake for a gull, and I soon realized that it was the head of a Polar bear. This was the first one

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we had seen and tremendous excitement prevailed. The bear, looking very yellow beside the white ice, was swimming near a large iceberg with vertical sides, up which it occasionally tried in vain to climb. As we got nearer the bear dived, and at the same moment the motor, which Courtauld was trying to run slowly, suddenly stopped. We were left with no power of steering the boat, making straight for the place where the bear would reappear. I was ready with the Mannlicher, when with a fierce roar the bear came up right under the bows. I saw its wicked little piggy eyes and its black snout a mere yard away. Although it was at point-blank range it was extremely awkward to shoot straight down into the water; we were afraid the bear might seize the gunwale of the boat and with one pull of its powerful forearm upset us into the fjord. Luckily the first shot told and the great cream-coloured carcass sprawled in the water.

We soon found that we could not tow the bear with the motor running without fouling the propeller, so set to work to row across the fjord. This took us two hours of the hardest pulling imaginable. Then when we reached the shore the corpse was so heavy that the three of us were quite unable to pull it out on to the sloping rocks; and I had an unpleasant two hours skinning the bear standing knee-deep in the icy water while the other two continued to map. As we were thus occupied a distant and terrific roaring was heard out in the middle of the fjord and we decided to sleep that night with rifles beside us.

When we were looking for a camp-site an hour later another bear was seen. As things had happened so fast that we had been unable to secure any photographs of the first bear, we thought this would be a good opportunity, so pursued it without any intention of shooting it, for the boat was fully loaded already. Stephenson and I were in the bows of the boat, gazing into the finders of our cameras, when all at once the motor stopped again. However, the bear still looked fairly distant in our view-finders, so we continued, hoping for a photograph. Suddenly I looked up and saw that in an amazingly short space of time the bear

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with great agility had clambered out on to an ice-floe and had turned snarling ready to attack. I dropped my camera into the bottom of the boat and seizing the rifle which was ready loaded on the bows, took a snap shot at the bear just as he was about to leap into the boat. We were so near that as he fell forward stone-dead he almost upset the boat with the splash of his huge body. After this narrow escape we thought it was about time to camp before we saw any more bears, so finding a small ledge covered with crowberries, about a hundred feet up, we were soon eating delicious bear steak. The second carcass we had to tie up in the water for the *Quest* to call for at a later date.

The following day was August Courtauld's twenty-sixth birthday, and since a birthday is always an excuse for merry-making on an expedition, we had a great dinner to celebrate the event. The menu was as follows:

MENU

August 26.

26th August.

Bear's Tongue Soup	
Fried Fillet of Kangerdlugsuatsiak Trout	
Seal's Kidney and Onions	
Theodolite Sauce	
Stewed Crowberries	
Horlick's Malted Milk.	Coffee.

The only excitement during the day had been the appearance of a walrus. We were all busy surveying when it put its head out of the water and watched us. Courtauld looked at it through the rangefinder he was using, Stephenson with a telescopic alidade, while I used mere binoculars. This was the only walrus that any of us saw in East Greenland. Not only did we see its white tusks, but it stayed up much longer than any seal and eventually dived with a vast splash.

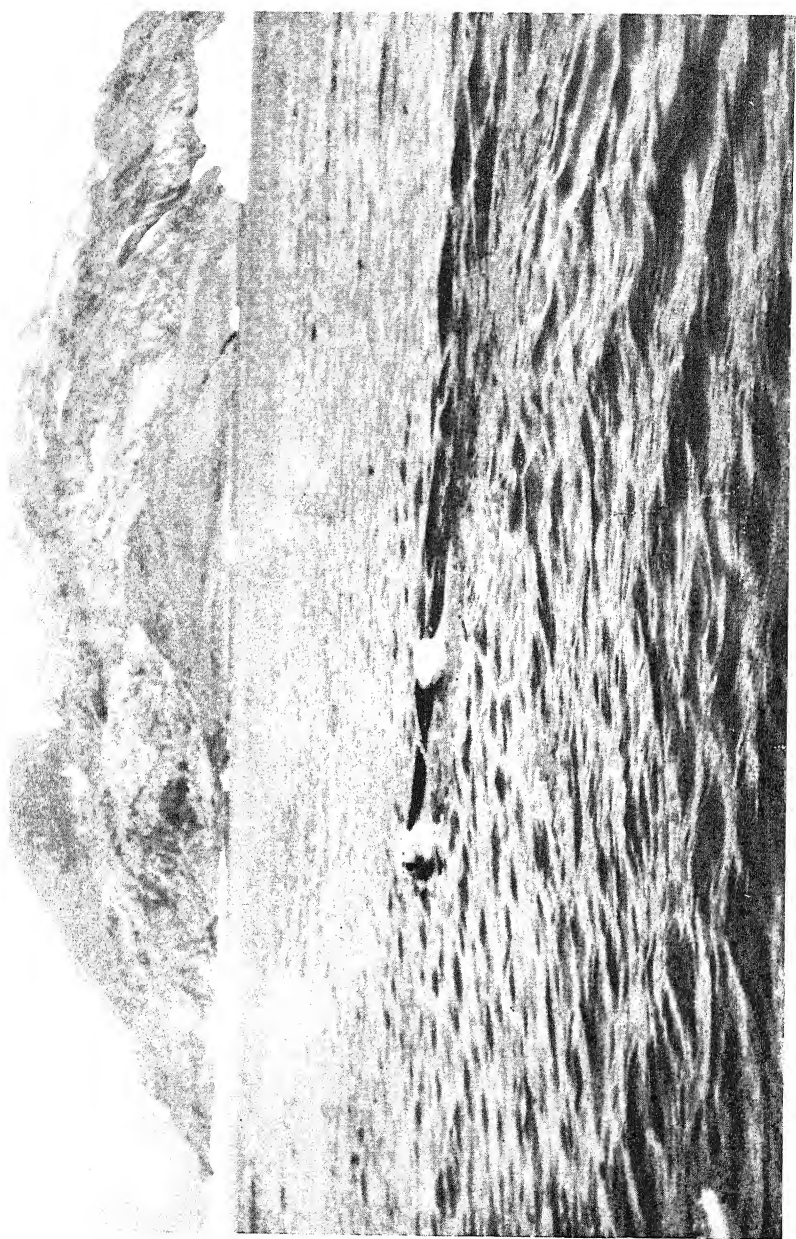
By this time we had broken so many sheer pins in the ice that there was only one spare pin left. This meant that whenever the ice was at all thick we had to row.

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One morning we found that the tide had stranded the boat on the rocks quite a long way above low-water line. Everything had to be taken out of the boat, and it took us more than an hour to launch it again, as we found that we were only just strong enough to hoist it over the rocks back into the water.

Next day, August 27th, was another day of excitement. I quote from my diary:

We stopped to put up the plane table just by a mild-looking glacier. As we started having lunch behind a boulder, a large mass of ice dropped off the glacier into the sea with a thunderous crash, followed by a cascade of crushed fragments and brash. It was about a quarter of a mile away. The ice was of that peculiar bottle-blue colour and we all stood and watched this magnificent spectacle: one doesn't often see a glacier perform at such close quarters. A small wave moved across the water toward us; it looked only six or seven inches high, but when this wave reached shallow water its effect was tremendous. It lifted the boat right up and broke with a roar on the rocks. This floated the painter off the rock to which the boat was moored, and the return of the wave took the boat out with it. Unfortunately the boat then hit some rocks sideways and filled with water up to the gunwale. We were stupefied for a second or two watching all our gear floating about in the water and the boat receding from the shore. I came to first, and dashing into the water up to my waist just caught the end of the painter before it was out of reach. We pulled the boat in and investigated the damage. The instrument box and all the ration boxes were full of water. Cameras, binoculars, guns and valuable surveying instruments were submerged. Our rucksacks were half-full of water and our sleeping-bags and tent floating about the fjord. After salvaging everything except an oar which had floated away, we hauled out the boat and spread out all our kit to dry on the rocks. We had just resumed our lunch when another mass of ice broke slowly off the glacier—even nearer than before. All our belongings were spread about on the rocks, and fearing that the wave might be larger than last time we spent a feverish half-minute gathering up all our gear and throwing it still higher up the rocks. We were just in time and nothing more got wet. An hour later I was just about to jump ashore when I slipped on some bear's fat on the bows and once more fell into the water.



BEARS SWIMMING IN KANGERDLUGSUAK FJORD

THE KANGERDLUGSUAK COAST JOURNEY

Next day, after interminable hours of rowing from point to point under a blazing sun, we heard the *Quest's* hooter and soon saw her turning in the sun as she avoided the floes. We had much to tell them and the Captain was simply green with envy to think that we had shot two bears and seen a walrus while he had found nothing.

They had been unfortunate. By the time they had got through the belt of ice to the open sea it was too dark for photography. D'Aeth tried to take off but hit a lump of ice; which was lucky because had they taken off they would probably have been unable to land again, for the clear water soon disappeared.

It was good to have a meal on the *Quest*, to get dry clothes and to clean our guns and cameras in comfort. Next day the *Quest* was off again to find a flying base, so the boat party had to start off at 4 a.m. although the sea was thinly covered with ice. Watkins and D'Aeth hoped to be able to fly back to the Base that day, so we said good-bye, not expecting to see them for another two months.

The *Quest* looked like some fairy craft as she rippled the still water in the early morning sunshine. We spent a busy day mapping and found the remains of an Eskimo settlement with several ruined winter-houses on a low island. I think the inhabitants must have all died of some disease, for we found as many as thirty burial cairns containing skeletons scattered about, many of them quite near the houses. The Eskimos cannot bury their dead as the ground is too hard, so they build a coffin of flat stones, over and around the body as it lies on the ground, and then cover the whole with a pile of stones. The vegetation round these old houses is always more luxurious than anywhere else and here there was a mass of lush green grass and flowers.

On our way to the next point we were amazed to see the *Quest* returning with the Moth still on board; it had taken off after five attempts, but it was too cloudy to risk flying back to the Base. The *Quest* soon set off again, this time to go to Mikki Fjord to see what the ice conditions were like there.

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We were rather depressed that night because the outboard motor had once more broken down, but next morning an event occurred which put our previous misfortunes well into the shade. We woke up to find that during the night the boat had tipped up and was now full of water, its precious contents having entirely disappeared. We discovered from the paint-marks on the rocks that the boat had risen with the tide, but on the ebb, the gunwale of the boat had caught up on a sharp point of rock, and as the tide went down the boat tipped and tipped till eventually its contents were emptied into the sea and the boat filled with water. Not only had our petrol supply, ration boxes and a miscellaneous collection of oars and poles gone, but our instrument box, without which our survey was impossible, had completely vanished. The box contained our theodolite, sextant, field-glasses and several cameras. In all, about £200 worth of equipment.

Ten long hours were spent that day searching the bottom of the sea from the overhanging rocks or from the boat. We knew that the box, not being water-tight, would sink sooner or later; but how far away it would be carried by tide and wind before sinking, we had no idea. At last, when the search seemed quite hopeless and I was frying some bear steak for supper, I heard a cry from Wager and Stephenson who were still disconsolately searching. They had found the box at last, only a few yards from where the boat had been moored. Although the box was painted black it had a curiously bleached look through fifteen feet of seawater, and perhaps that was why we had not noticed it earlier. We lashed the boat-hook to one of the oars but could not catch hold of the handles which were lying flat against the end of the box. It appeared that the only hope was to dive down and turn up one handle so that the hook would hold. This was chilly work, but it was done and very soon we had regained the box. After washing the instruments and cameras in a pool of fresh water to get rid of the salt, we spent most of the night taking them to pieces and trying to dry them. Courtauld took the theodolite to bits; and although he lost at least five small screws and

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springs, and had as many parts left over when he had finished, the instrument actually worked again.

We had to row right across the fjord next day and it was so rough in the middle that several times the waves came over the gunwale. That night we camped on a low headland of barren-looking volcanic rock running out into the fjord between Amdrups Fjord and the main fjord. Several times in the last few days we had heard occasional short grunts of bears, and that evening when out ptarmigan-shooting I had found the fresh droppings of a bear lying on a snowdrift. As the bear had been living on grass and berries, for they find it very difficult to catch seals in the summer months, we expected that it would be pretty hungry, so slept that night with our loaded rifles beside us.

Neither Wager nor I could get to sleep for some reason. I remember we sat up late smoking our pipes in the candlelight and wondering what chances we would have if the bears raided us. Captain Schjelderup had told us many harrowing tales of bears attacking men and I must confess we were not too happy. The wind was blowing out of the still night in sudden uncanny gusts and I had to go outside to pile more stones on the flap of the tent. Outside the aurora was more beautiful than I had ever seen it. It looked just as if a number of cars with green headlights were coming up on the other side of the hills. There were no clear-cut beams: it was as though the lights were showing through a curtain of slight fog. The whole sky was covered with these pale glimmerings, often tinged with crimson or purple.

Suddenly my admiration of the aurora was disturbed by the growls of a bear coming from the point only a hundred yards away. In a lull of the wind I could hear him breathing and snuffing quite clearly. After a few seconds all was silent again and I bolted back into the tent. Wager and I were listening intently when to our horror we heard something shuffling about outside. I got my gun ready and with bated breath was cautiously undoing the opening of the tent when we heard a voice. It was only Courtauld walking round and piling stones on the other

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tent-flap a few yards distant. After this scare, realizing the futility of keeping awake, we soon went to sleep.

That morning on going down to the sea to collect some ice to melt down to make our porridge, I was delighted to see two bears swimming down the fjord only 50 yards from the point. The wake they made was enormous: they were swimming one behind the other and the second one appeared to be a cub. I called the others, and while Wager stayed on the headland to direct our chase, the rest of us started to row in pursuit. We already had more bear-meat than the small boat could carry, so we went out solely to secure photographs, though of course we kept a loaded Mannlicher in the bows in case the mother should turn on us. Although the Polar bear can move with great rapidity on ice or land it is a slow swimmer, and very soon we caught up with them. The leading bear dived clumsily every few minutes, each time almost drowning her cub who was swimming just behind her. The mother turned every now and then with a grunt, her dark snout and wicked little black eyes contrasting with her creamy coat and yellow fangs. Finding she could not escape us, she presently clambered out on to an ice-floe with extraordinary agility for so ponderous an animal. She waited there snarling and restlessly swinging her snake-like neck from side to side, while the cub made vain attempts to follow its mother. She looked behind her as if meditating escape, and then after lowering her nose and touching her cub she put down a vast forepaw and hauled him up bodily by the scruff of his neck. Then the two shambled off across the floe and took to the water on the other side.

Soon the *Quest* appeared again and the Captain was very angry with us for letting two bears escape without even shooting at them. He had never heard of such a thing: it was all against the best traditions of Norwegian hunting. But he soon forgot all about this, for the mate up in the crow's-nest had sighted a cream-coloured object on a floe a mile further up Amdrups Fjord. The *Quest* immediately went full steam ahead after it, and the bear, probably never having seen a human being before, waited,

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overcome with curiosity, till the *Quest* was in range. A very fine shot from the Captain tumbled it into the water. While we had been getting nearer it behaved in a most extraordinary way, lifting its snout high in the air and then lying down flat on the ice with its neck stretched out, and even rolling on its back. After this performance it trotted away with its mouth open only to return again. I think the explanation is that it was very hungry and was hypnotized by the good smells issuing from the galley. Its stomach contained only grass and berries, though it was in good condition.

This excitement over, we heard some very thrilling news from those in the *Quest*. Apparently Mikki Fjord had been ideal for flying, and on the 1st of September they had taken off to photograph inshore. Right inland, about 60 miles away behind the coastal hills, they were amazed to see a range of mountains whose very existence had never been suspected. These mountains were of enormous height and towered above the nearer mountains, many of which we knew to be more than 7,000 feet, with Himalayan grandeur. They found it very difficult to estimate their height; at the time they thought they must be between 15,000 and 17,000 feet, but later on they thought that too optimistic. In front of these new mountains was a large frozen lake: it was most unusual to find a lake so far inland.

After this, on September 2nd, Watkins and D'Aeth flew down to the Base, a distance of 300 miles; and at midday we had a wireless message from Angmagssalik to say that the *Moth* had just passed over the settlement. For some days now the Captain, whose experience of the Arctic seas was very great, had been telling us that it was quite suicidal to hope to get back to the Base in our small boat. We had already broken two outboard motors and it was only due to the skill of the ship's engineer that we still had one in running order. Also, as we had mapped so much of the coast on the journey up, we would be travelling past known ground most of the time. The Captain had grave fears even for the safety of the *Quest*. The season was far advanced, and though he had had most phenomenal luck with the ice so far, it could not

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last for ever. So before Watkins flew south it was decided that we should return in the *Quest*, stopping when necessary for Stephenson to complete his map of the coast, using the *Quest* as a base. There was no shelter on this first stretch of coast south of Kangerdlugsuak and the Captain was afraid he might get trapped by the ice if the wind were to change.

On September 2nd, then, we started homewards; but soon fog came down and mapping was difficult. The ice was so thick that it was impossible to land, so we tried to use the various instruments from an ice-floe, but without much success. As the fog got worse the *Quest* steered out to the open sea, beyond the belt of pack-ice. On the way out we saw a huge bearded seal lying out on a floe, and after a stalk in the small ice-boat the Captain shot it. It weighed nearly half a ton.

We were unable to land on the island of Aputatik, which was rather unfortunate for the survey; and next day it was raining hard when we awoke to find the *Quest* anchored against a low-lying island covered with a small Ice Cap of its own. We found the remains of an Eskimo house here, in a good state of preservation, and a great heap of the bones of bears, narwhals and seals. These houses usually consisted of a square wall of large boulders with a stone tunnel doorway as much as 10 feet long and less than a yard high. As a rule the roof was absent, and there were spaces on each side of the doorway for windows. At the back was a raised stone bench to sleep on.

Next day we made for Aggas Island, and just after breakfast we saw a huge bear on the top of an ice-floe. This was shot after a short chase, and was the last bear we saw that summer. It seemed sad that we had to shoot all these bears, but we could not afford to spare the vast amount of fresh meat they represented.

The ship's carpenter met with an unfortunate accident on this day. He was at the helm when the *Quest's* rudder suddenly struck a lump of ice. The wheel spun out of his hands and one of the spokes gave him a bad gash in the groin.

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The survey progressed fairly well, and Stephenson was busy with his plane table, being rowed ashore at 3 a.m. most mornings and working till 8.30 p.m. to make the most of the daylight. The nights were now sufficiently dark for us to take observations on the stars, and the days were spent working out interminable computations to find the latitude and longitude. This survey was done at full speed because the Captain was afraid of getting caught by the autumn gales while still in the pack, and it was all Stephenson could do to get him to stop at all. However, we had to anchor during the night and Stephenson could then escape at dawn.

One morning we saw a whole school of seals, about twenty of them, diving and swimming in unison. These were Greenland, or Harp, seals going on their periodic wanderings. After Kruse Fjord, where we discovered some new islands, the ice was rather thick, and we had to run further out to sea during the night. In the morning we returned to the mainland about Cape Gustav Holm. In the open sea there were several Little Auks about, which dived when the *Quest* was almost on top of them. On the coast the Arctic Terns had already gone south, but there were still large flocks of Kittiwakes, a few Fulmar Petrels, and Black Guillemots and an occasional Greenland or Iceland Falcon.

On September 8th we reached Lake Fjord once more, running in there to shelter from a storm. I put up my rod and tried for a salmon with fly and spinner: a month ago they had been there in hundreds, but now there was no sign of them. Possibly they had all gone up to the lake for the winter.

A depôt of petrol and sledging boxes was left by the lake so that it would be ready if it was wanted to extend the range of the aeroplane. This fjord, with its large fresh-water lake, was the best place we had yet seen for an Air-Route Base. It was quite impossible in the short time at our disposal to make a good map of the tangled mass of islands and fjords just North of Angmagssalik; so to the immense relief of Captain Schjelderup we made straight for Angmagssalik settlement, getting there on the evening.

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of September 13th. At Cape Dan there was not a piece of ice in sight on a stretch of water which six weeks before we had taken three days to penetrate. That night several of us had dinner with the new Governor, and later on a dance with the Eskimos.

Next day we got back to the Base, eager to hear how Scott's Ice Cap party had fared, for we had already been informed by wireless of their return. The *Quest* stayed only a few days at the Base, and then went off to Reykjavik to collect the ski undercarriages for the Moth.

CHAPTER III

Establishing the Ice Cap Station

I

THE investigation of the meteorological conditions of the interior of the Ice Cap was one of the primary objects of the expedition: not only in connection with the proposed Air-Route but because the weather experienced throughout the whole of North-West Europe is supposed by many experts to be controlled, or at any rate largely influenced, by the sudden changes of pressure originating over the inland ice.

For a long time the Ice Cap was a region of mystery, peopled in Eskimo folk-tales by superhuman beings and gigantic monsters. After the abortive journeys of Nordenskiöld and Peary from the West Coast it was left to Nansen to make the first crossing in 1888—a marvellous tale of adventure and achievement. This journey showed that the Ice Cap, at any rate in latitudes 64° and 65° , rose gradually from a much-crevassed margin to a height of almost 9,000 feet. In the desolate interior tremendous winds and extreme low temperatures were encountered.

Following this memorable crossing Peary, Rasmussen and J. P. Koch, in a series of epic journeys up in the north, showed that the Ice Cap was much the same through Greenland. Then in 1912 De Quervain crossed over from the West Coast, arriving out in Sermilik Fjord—not many miles north of our Base. It appeared from data collected on these journeys that the Ice Cap was higher both to the north and south of a line connecting our Base with Disco Island. If there should be a valley crossing the Ice Cap it would be of great value to the Air-Route, and to settle this question was one of the objects of all our Ice Cap journeys.

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Watkins' intention was to keep open an observation station, if possible throughout the year, at the highest part of the Ice Cap lying on the line of the proposed Air-Route between Angmagssalik and Disco Island. This would be in latitude 67° and about 130 miles from the Base. The Station would be established and maintained with the aid of dog-sledges, though it was hoped at this time that the aeroplanes would be able to keep in touch with the sledge parties and drop supplies to them and even to the Station itself. In winter, if sledging became impracticable, it might be possible actually to change the personnel by aeroplane if the landing conditions on the snow were suitable.

To communicate the landing conditions at the Station, and to keep in touch generally with the Base, a short-wave wireless set and charging motor were to be taken up by the first sledge party. This would be especially useful if one man were left alone at the Ice Cap Station. Watkins realized long before we left England that such a contingency might arise, and while few of us were very enthusiastic we had all agreed that if necessary we would be prepared to stay alone at the Station. Unfortunately the essential loads for the establishment of the Ice Cap Station proved so large that Scott's party had to leave the wireless set behind.

Scott, with his previous experience of dog-driving, was in charge of this journey, while Rymill was responsible for the navigation and position-finding. Bingham, Riley and Lindsay made up the party. The last two were to remain at the Ice Cap Station for a month at least, to erect the various instruments and take three-hourly observations of the temperature, barometric pressure, force of the wind, etc.

On August 11th, as soon as the rest of us had helped the party up to the foot of the glacier and departed in the *Quest*, their troubles started. Their four dog teams had not been driven since they had left their West Coast home. It was soon found to be quite impossible to drive them in the more efficient single-trace method which Scott, the only one of the party with dog-driving experience, had been used to in Labrador. No dog would pull unless it was

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shoulder to shoulder with others of its family; therefore, as there was no time to train them, the less-efficient fan formation used by Angmagssalik Eskimos had to be adopted. Here all the dogs are the same distance from the sledge, each with a trace of his own ten or twelve feet long.

In addition, all the snow had been melted by the sun and rain from the surface of the ice, which was so prickly that dog boots had to be worn. These were of canvas and it was a long job tying them on each morning, and worse still removing them again at night when they were frozen stiff.

The loads for each sledge amounted to about 600 lb., for a team of seven dogs. The steep waves of ice on the first stretch of two miles to the foot of Bugbear Bank delayed the party, since often all five men would be needed to move one sledge. The rain, which fortunately had kept off since our arrival in Greenland, now started to make up for lost time, and when the party reached the foot of Bugbear Bank to camp they were all soaked.

Three men slept in one tent and two in the other. These pyramid-shaped tents, which were always used for Ice Cap work, were actually double tents. An inner tent of rot-proof cloth was suspended by tapes from four seven-foot bamboo poles which were pushed into the snow, leaving a floor space six feet by five. Near the apex of this tent were tapes on which light garments could be hung to dry. An outer tent of slightly thicker cloth was laid on the outside of the poles. This outer tent, as well as guy ropes for tent-pegs, had a projecting skirt 2 feet in width on which ration boxes and snow could be piled. Thus the tent offered little resistance to the wind, and being held down by as much weight as one cared to heap on the skirt, as well as by the guys, was proof against wind of almost any force. There was then an air space of at least 6 inches between the tents, which would tend, on the principle of the thermos flask, to keep the interior at an even temperature and to retain what heat there was for as long as possible. A ventilator, in the form of a hollow bamboo a foot in length, led from the summit of the inner tent out to the open air.

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Entrance was effected by crawling through two corresponding openings in the tents, as if into the mouth of a sack. Once inside, both tubular flaps could be tied up separately so that the air space was uninterrupted and no snow could enter. These tents, which were made by Camp and Sports Co-operators Ltd., were found to be admirable in every way.

It was at this camp that Rymill, who had not been feeling very fit, was found to have a badly poisoned wrist. The Doctor lanced it and observed that if it had been left a day longer his life would have been in danger as the poison had already spread to his shoulder. It was lucky that this happened just here because Rymill could stay in the tent for the next two days while load after load was laboriously hauled up Bugbear Bank.

This was even harder work than unloading coal. The 300 yards of ice was so steep and slippery that unless crampons were used it was impossible to stand up, much less push a sledge. The dogs could get no grip, so that half-loads had to be taken and even then all hands were needed to get the sledges up to the top. About six loads could be taken up in the day.

At the summit were some large gaping crevasses, but a somewhat circuitous way through could be found, which was safe as long as the dogs were kept well under control. The rough going of the day before had broken one of the sledge runners at the front, and this had to be repaired before the sledge could be used again. On this journey, as on all Ice Cap journeys, the Nansen type of sledge was used. This was made of hickory and ash and ran on wooden runners 4 inches wide so that a large load could be supported even on soft snow. The whole sledge was lashed together with raw-hide thongs so that it would bend and conform as nearly as possible to the undulations of the surface over which it was passing.

Above Bugbear there was slushy snow in the hollows of the ice, with water often ankle-deep. Although it froze at night it was so hot in the day that only trousers and a shirt were needed.

Rymill was now well enough to walk ahead of the sledges to

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find the best way through the sea of rough ice hummocks and deep wet snow. From this height, they were now about 3,000 feet up, there was a wonderful view over the Base Fjord and the drift ice which could be seen stretching far out beyond Cape Dan. After skirting a horseshoe-shaped valley a more sinister belt of crevasses appeared right across the route, and two men had to go ahead roped to find a way through. These crevasses were safely passed at last and camp was pitched on the edge of an even more forbidding group of crevasses which seemed to continue for miles. Most of the day it had been necessary to push on, moving only two sledges at a time, as the going was still very rough and heavy and the dogs were not yet in good condition.

That night as the sun set all the larger icebergs among the pack were encrimsoned with the dying rays of the sun, and the Base itself could just be made out as a dark spot on a low headland running out into the ice-scattered fjord.

On the following day progress was even slower, and Scott tried to make westward, more in the direction of his destination. It was raining hard and rivers often knee-deep flowed down the ice channels. Soon they were among crevasses again and Scott and Rymill went ahead roped together. Both several times put their feet through enormous crevasses thinly bridged over with snow. It seemed to be quite unsafe for the sledges, and reluctantly they decided to retreat. After turning back they followed the coast northward a bit further, but fog came down and they had to camp. However, a rest was badly needed, for the work of hauling the heavily loaded sledges over this difficult surface, as well as the continual nervous strain of watching for crevasses, had quite exhausted the party.

Next day they had to go back for three-quarters of a mile or more, as the crevasses were quite impenetrable just in front. It was still raining and the visibility was very poor. There were large pools of water and innumerable rivulets, so that their legs were continually soaking. The crevasses here were so wide that the sledge could easily have slipped through, to be lost for good.

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It was terribly hot work controlling the heavy sledges and trying to stop them going over sideways into the pools. As the temperature was 40° F. it seemed better to travel at night when the going might be harder, but at that time it did not even freeze at night. However, now that the hard ice surface had given way to slushy snow it was possible to wear waterproof seal-skin boots, which reached to their knees, instead of heavy climbing boots. Even then the water often came over the top.

Next day, August 17th, the crevasses were more numerous, and suddenly the dogs of the leading team, being slow to obey the whip, broke through the fragile crust over a crevasse and disappeared dangling in their harnesses. Luckily all the traces and harnesses held and the dogs were soon hauled out again without loss. By evening there were 3° of frost, and a surface of powder snow enabled them to cover 8 miles by nightfall; the worst part of the route seemed to be past, and in front of them the Ice Cap rose gently and uncrevassed as far as the eye could see.

Small red flags had been put up to mark the best way through the crevasses, but now that the dangers were passed a large flag was erected and boots and any spare garments were left beside it. This was always known as the Big Flag Dépôt and the mileage of Ice Cap journeys was measured from here. As it had taken them six days to get here, although it was only 15 miles from the Base, the dogs were now reduced to three-quarter rations. One dog, an excitable animal which refused to do any work, was killed and buried at the foot of one of the flags as an emergency ration for later journeys.

From now on the scene changed to what most of us will carry with us always as the most intense and lasting memory of Greenland. The dark tops of the coastal mountains gradually disappeared below the encircling horizon of snow. No rock or patch of earth nor any living thing broke the monotony of this featureless plain of dead white. The moving tracery of the high cirrus clouds above and the shadows of the snowdrifts below were all

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that anyone walking ahead of the sledges could focus his eyes upon.

As long as there was no drifting snow the steering was fairly simple. As the magnetic variation in this part of Greenland is about 45° W. one had to steer almost due N. by compass in order to go N.W. Rymill went ahead on skis, stopping every now and then to take a back-bearing on to the last flag (forward bearings could not be taken, for in front there was nothing but snow and cloud). Scott came next with the sledge-wheel to find the exact distance covered since the last flag. This sledge-wheel was like a small bicycle-wheel with a flat metal rim three or four inches wide and was dragged behind the sledge. The actual distance was recorded by a small speedometer: it was not quite accurate, as snow used to stick to the rim and also because it recorded all the minute undulations and ridges of the snowdrifts. The sledge-wheel was followed by a second compass-man who took bearings on to the man out in front so as to keep him in as straight a line as possible. The last two of the party erected the flags. These flags were squares of especially strong bunting about one foot square—each with its own number stencilled on it—attached with tapes to 4-foot bamboos.

The flags were placed with meticulous accuracy at half-mile intervals, and it was hoped that they would last throughout the year so that all later journeys to the Ice Cap Station would be able to follow the line of flags instead of having to spend time navigating with compass and theodolite.

Sometimes it was so hot (60° F. in the sun) that when there was no wind gloves and helmets could be dispensed with; only flannel trousers and shirts being necessary. Now that the snow was fairly dry deer-skin moccasins were worn over a sock or two, then a thin canvas gaiter which prevented the snow getting in between the moccasin and the trousers. Snow-glasses, of course, had to be worn to protect the eyes from the fierce glare of the sun off the snow: they were even more necessary in the diffused light produced when the sky was overcast. It was really too hot for

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ideal sledging, the surface of the snow melting so that it congealed and balled up on the runners, which frequently had to be scraped. Ski-wax was tried, but it soon rubbed off. The melting snow, too, made the moccasins and feet wet, so that when it froze again in the evening there was some danger of frost-bite. Rymill, who was not wearing the winter-bindings on his skis, but the ordinary Alpina bindings over boots, got his toes mildly frost-bitten.

Sometimes the surface improved and the dogs went so well that it was possible to ride on the sledges for a short distance, but usually the men trudged beside the sledges, continually having to shout at and encourage the dogs, and often for miles on end having to push the sledges themselves. Under these conditions between fifteen and twenty miles would be covered in a day, though the weather on the Ice Cap was extraordinarily changeable. They might wake up at about six o'clock to find a cloudless sky with only a few degrees of frost, but by midday mackerel clouds would have formed and by evening the sky might be completely obscured by cloud or fog, while the wind, which was usually due north, would swing round to the south.

When the visibility was bad it was desperately difficult to keep on the right course. It was then impossible to see the last flag from a hundred yards distance, and one sledge had to remain beside it so that bearings could be taken on to it. This was naturally very slow work.

On August 20th a range of mountains, refracted up to more than natural size, appeared to the East. This was the Mount Forel range. Scott was increasingly worried now because dog food was running short: there was only enough for another twelve days. The trouble was that the weather was so changeable, and everything depended on their being able to lay out the flags with extreme accuracy.

They would start off in perfect weather, being able to see a line of three or even four flags stretching over the gently undulating snow behind them. Soon, however, minute snow-crystals would appear, later developing into a fall of snow which reduced the visi-

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bility to a few yards. They would put up one tent, and all five squashing into it, cocoa would be brewed over the primus. Suddenly it might clear; the tent would be hastily packed up and the sledges started, by which time a dense fog would have descended. This would go on for some hours, until evening was approaching and they would decide to camp for good, ready to get up at 3 a.m. to make a really early start. The tents would no sooner be put up and the evening meal started when one man might look outside to find a perfect evening, and to see the line of flags once more leading away into the distance.

The going too was variable, and sometimes breakable crust, making walking very fatiguing, would take the place of the hard-beaten powder snow. The dogs, being on three-quarter rations, were getting apathetic, the white desert affecting them too. However, on August 23rd the weather was more settled and 19 miles were covered before it got dark: they had only another 50 miles to go. The surface here was varied by a series of gentle undulations about 2 miles from crest to crest.

They were now more than 7,000 feet up and everyone was feeling the height. Much more effort was needed to dress and pack up in the morning, and any sudden effort made them breathless. Even at this height occasional thawing delayed them, making the snow sticky and the going heavy: but the temperature would suddenly drop from 35° almost to zero, and a cold wind, usually from the North-West, would dry the snow again in a few minutes.

The weather had been too changeable for fixing longitude and latitude, but on August 26th a meridian altitude confirmed an observation taken on the day before. They had decided to stop when they reached the 67th parallel of latitude, which, if their course had been exactly accurate, would be 120 miles from the Big Flag Dépôt. Judging by the observation which they had taken, they had reached this latitude but had not gone far enough in. This looked as if they had been going too much to the east. Scott decided to wait till the weather allowed them to get a more accurate observation: if they could not get a suitable day for this they

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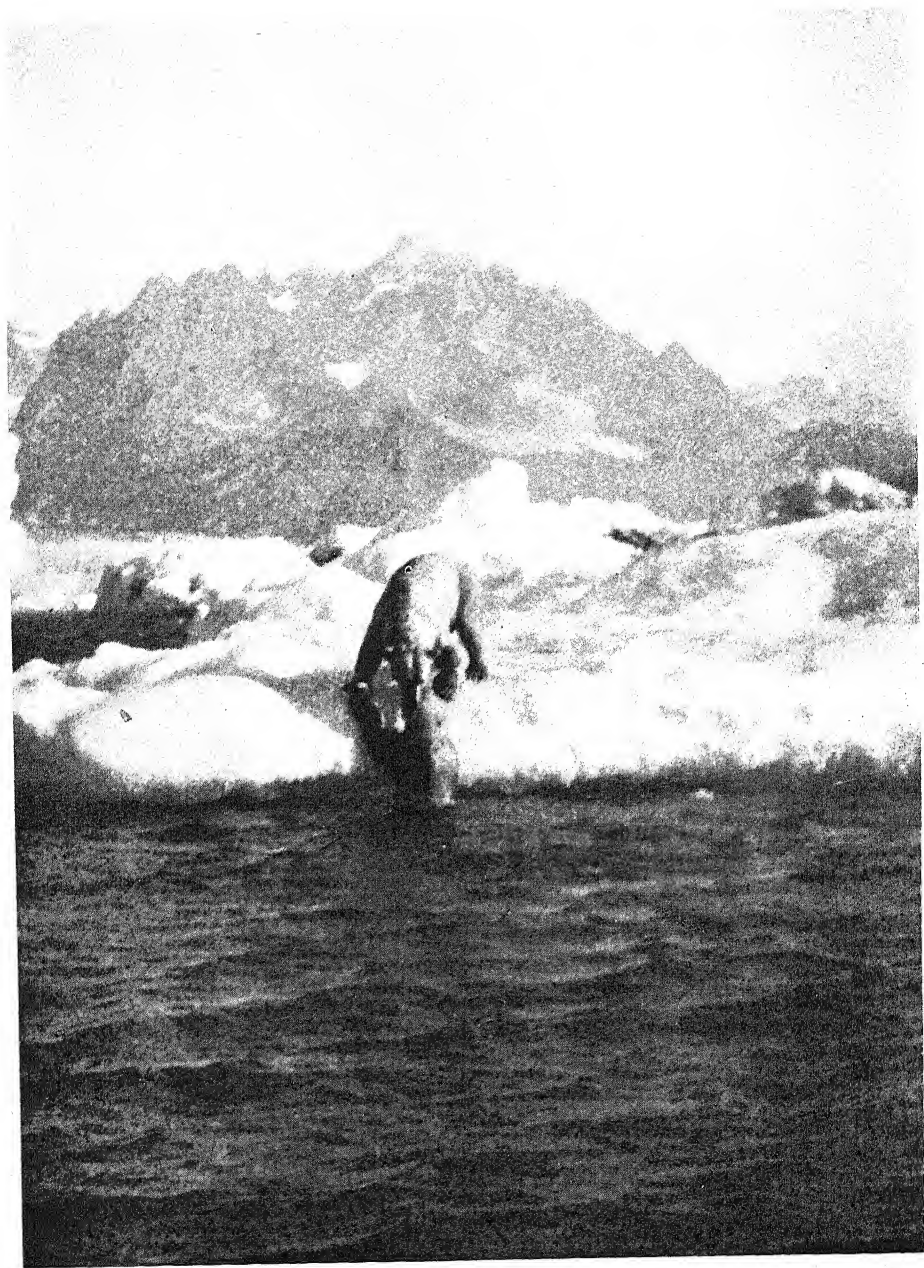
must put up the station where they were, but if the longitude was found they could go on a little further.

On August 27th the sky was tolerably cloudless. The wireless aerial was stretched across two skis in the snow and Rymill disappeared into the tent with the time signal set. To the amazement of everybody it worked, and the resulting longitude put them 10 miles east of where they had intended to stop.

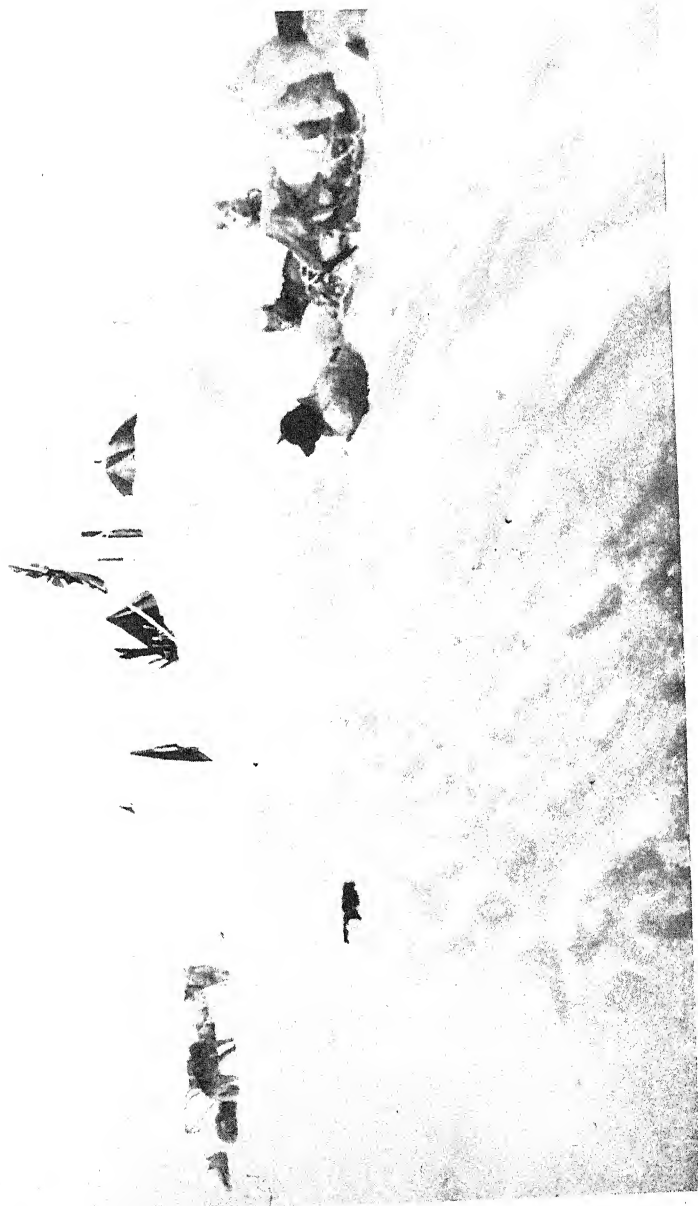
As dog food was so short, Scott decided to start very early on the following morning and to go as far as he could on a more westerly course before it was time to stop for taking another longitude. After 7 miles they seemed to be descending slightly and as they were already at a height of 8,600 feet it was decided to establish the Ice Cap Station where they then were—112 miles in from the Big Flag. The weather looked uncertain; there was a grey and rainbow-coloured halo round the sun, and Scott felt he must not stay an hour longer than necessary. The dogs would only be able to have half-rations on the return journey. They were already eating their traces at night and the remaining pemmican had to be kept inside the tents for safety.

The first thing to be done was to erect the Ice Cap tent. This consisted of a large double dome-shaped tent. The inner tent, 10 feet in diameter, was suspended by tapes from six curved wooden ribs which met at the apex. It was very cold work tying all the tapes, with the temperature down to zero, but once this was done the outer tent was soon hung over the bamboos and all was ready for a house-warming party. The entrance to this tent was by a tunnel beneath the snow, which started a few yards away from the tent wall and came up just inside. A chimney-like ventilator led from the summit of the tent to the open air, increasing its likeness to an umbrella.

Early next morning Scott, Rymill and Bingham lashed up three of the sledges with their personal kit, one tent, a box of sledging rations, the survey box and dog food for four days. With three sledges instead of four they had to reorganize the four teams into three teams of nine dogs, each of which was consequently very



BEAR HELPING HER CUBS ONTO AN ICE-FLOE



ICE CAP STATION, OCTOBER 1930

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difficult to manage. They were away by four o'clock, but were delayed at the outset by a humorous incident. With the fan-trace method of dog-driving the loop at the extremity of each dog's trace is threaded on to a short piece of rope known as the leading-trace, which is usually attached to the front of the sledge with a very simple knot, so that in case of emergency it can be undone in a moment and the dogs liberated. Just as the Doctor was starting off, his leading-trace came undone and his nine dogs, full of joy at the sudden lightness of their load, went rushing off across the Ice Cap, leaving him sitting on his sledge muttering strange things in Irish. However, they were soon recovered and the party set off eastward following their line of flags. Riley and Lindsay watched the sledges for a couple of miles till they disappeared over a gentle undulation in the snow.

Left to themselves, the uniqueness of their position became more apparent. Here they were, completely and gloriously isolated, entirely their own masters for four or five weeks. No conventions to worry them, no letters to write, in fact no sort of link with the rest of the busy world. Infinitely remote they seemed, 120 miles from the nearest house, and more than 8,000 feet above sea-level.

There was, however, plenty of work to do. In the first place the tunnel had to be enlarged. This was dug out so that they could go down about six steps, then along for 10 feet, and standing up at the end their heads and shoulders would be inside the tent. A tubular ventilator with an adjustable aperture drained away the stale air as it rose, while just enough fresh air would be sucked up through the entrance to take its place. So the tent would never get too hot and—in theory at any rate—never too cold.

After the tunnel was finished they set about building a wall several feet high right round the Station. When the wind dropped it was very warm in the sun, even in September. They would work in their shirt-sleeves and in the afternoon sit outside, reading in the sun, although the shade temperature might be well below zero. When they left the Base the plan had been that Lemon

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would sledge up with Rymill as soon as the latter got back to the Base. After the first fortnight, therefore, they found themselves continuously searching the south-eastern horizon for any sign of the sledge party.

Soon the various instruments were erected: the comb nephescope for measuring the speed of the clouds; the cup anemometer for gauging the force of the wind; the Stephenson screen, an openwork box on legs, to protect the maximum and minimum thermometers; two poles to measure any permanent increase in the depth of the snow; and inside the tent an automatic barograph and thermograph.

At first the instruments were read every three hours. But unfortunately—or perhaps fortunately—the alarm clock failed to survive the journey up, and as they found it too much of a strain trying to wake up at three-hourly intervals through the night, the observations at 1 a.m. and 4 a.m. were given up.

As far as supplies were concerned they had sledging rations to last them five weeks on full rations, but if necessary these would last about double the time. They also had a few luxuries which they brought up with them: small bags of peas, beans, rice and some tea. There was also a plentiful supply of paraffin, about twenty-four gallons having been left by the sledging party. This was for use in the primus stoves, the primus heaters—for warming the tent—and in the Aladdin lamp. This lamp monopolized their time to the extent of about an hour every evening till it became a regular routine. It simply would not burn properly. Each evening they would follow the directions for lighting it with the greatest care; and although it invariably almost lit, it never kept going for more than a few seconds and they had to rely for light on their rather inadequate supply of candles. A month later, when the relief party arrived, an examination revealed the fact that a spare burner, wrapped in paper, was cunningly concealed in the stem of the lamp through which the fresh air was supposed to be drawn! Riley and Lindsay were both keen chess players, and after the game of “lighting the Aladdin” they usually

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had two games of chess before getting into their reindeer-skin sleeping-bags.

But there was still plenty of work to be done. Watkins had told them to put flags out from the Station at quarter-mile intervals towards the four points of the compass. As these flags had numbers stencilled on them, any party which missed the Station in dull weather would be able to know its direction and distance if they came on one of these flags.

Very frequently, in fact whenever the wind rose at all, the snow would start drifting, making the atmosphere as thick as fog up to a height of 6 or 8 feet. This soon tended to fill up the tunnel and the yard, so that hours of digging had to be done in the mornings. As well as the drift quite a lot of snow was formed by precipitation, sometimes as much as 2 feet falling in a single night. The temperature would fall below zero most nights and go up to about 12° (F.) in the day. On the night of September 11th they had 46° of frost, and in the morning the inside of the tent and all the clothes hanging up were covered with hoar frost.

Anything left outside was soon buried in the snow, and as there was already quite enough paraphernalia inside the tent they decided to build a few snow-houses for the stores, and also to house the charging motor for the wireless, which they expected to arrive at any moment. Two of these snow-houses would be connected with the main tunnel by underground passages. A third would be constructed on the other side of the yard for a latrine.

According to Stefansson anybody can build a snow-house, given a snow-drift of the right consistency and the requisite knowledge. Following the directions in *The Friendly Arctic* they set to work and soon the first snow-house was completed. To begin with they found some difficulty in getting the blocks cut right, and they would fall to pieces as they were being carried from the drift, where they were cut, to the house. Lindsay at first insisted on having a cupboard built into the wall, but unfortunately Stefansson has no directions for such luxurious adorn-

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ments, and after several vain attempts Lindsay had to reconcile himself to a cupboardless snow-house. They soon got the knack of building, however, and found it was as easy as Stefansson said.

It was curious how quickly they became acclimatized to the cold. Sixteen degrees of frost on the journey up had seemed more than Polar, but now they woke up usually to find about 35° of frost in the tent; and during the day, in spite of primus stoves and the heater, they were never able to get it warmer than 45° (F.). One day when it was especially foggy and unpleasant outside they stayed in all day reading, but the resulting headaches they experienced on the day after stopped them trying the experiment again.

As well as with daily expectation of the arrival of the wireless party they beguiled the tedium by planning when and how they would make their way back to the Base should no sledge party arrive before the food was finished. After all, it was quite possible that the Base, together with the sledging equipment, had been burnt down; or the whole sledging party might have disappeared bodily through a crevasse. Scott's party had left them the extra sledge and one of the tents, so that they would have little difficulty in following the line of flags back to the Base.

Thus time passed till they had been there a full month. Then they started to reduce their rations, in case the relief party was delayed still further. They found, however, that they needed very little to eat. A plate of porridge and a cup of tea comprised their breakfast; for lunch they ate half a biscuit, with margarine, and a little chocolate. They would have the other half of their biscuit and more tea in the afternoon, and then a brew of pemmican, with a few peas in it, for supper.

Already they found themselves repeating the same story two or three times. An extraordinary intimacy grew up between them; they had no inclination to quarrel. Each time the snow slipped off the roof of the tent with a sudden scurry one of them remarked that the cat was on the roof again. Every morning the postman was overdue and the telephone out of order. Several

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times towards the end of September the aurora was more than usually beautiful and they would go out to watch the greenish beams almost covering the sky with an unearthly glimmer, dulling the bright stars.

On the evening of October 2nd, a misty day, they were lying in their sleeping-bags in the tent smoking their pipes, having given up any hope of the relieving party arriving that day, when suddenly a sharp bark was heard outside, accompanied by the crunching of snow. The relief party had arrived. They hastily picked up helmets and gloves and ran out into the open. . . .

II

Things went well with Scott, Rymill and Bingham after they had left the Ice Cap Station on August 30th for their journey back to the Base. It was possible now for the drivers to ride the sledges, indeed it was almost impossible at that altitude to keep up with them by running alongside. Nearly 21 miles were covered in the first five hours, including a few halts, chiefly for untangling the traces. This was one of the chief disadvantages of the fan-trace method of driving : the dogs would keep on dodging in and out among each other till all the traces were plaited together for several feet. The leading trace would have to be undone and the traces disentangled. Usually the gloves would have to be removed for this; and another disadvantage was that if the dogs suddenly decided to bolt while the leading trace was undone there was no way of stopping them.

The dogs, however, could now be controlled by word of mouth. "Yuk" and "Ille" meaning left and right respectively, while "Unipok" is the Eskimo for "stop". To teach them the meaning of these words the whip would be cracked on the left of the team while "ille, ille, ille" was shouted. For fan-trace driving light Eskimo whips ten or fifteen feet long could be used, but for single-trace heavy walrus-hide whips were necessary with a lash at least 20 feet long, requiring great skill to wield. The surface continued to be perfect, hard-beaten powder-crust without a trace of

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wind-drifts. Forty-three miles were done before dark, in nine and three-quarter running hours.

At night all three men packed into the single tent, the other having been left at the Station. This was rather inconvenient, as the food box and the box containing the cooking equipment had to be put outside after each meal, not to mention the overcrowding. Next day when Bingham walked over to his sledge he was astonished to find a small puppy lying by itself whimpering in the snow. The mother was a pale-eyed bitch called Unalit who had been pulling as well as usual the day before. The pup and its mother were put on the top of the sledge in a special nest, and during the day four more puppies were born. That day a solar halo indicated bad weather, and after 20 miles it started to snow. At this speed it was impossible to keep direction, and after finding themselves running in circles they were compelled to stop for the night.

Since they had not themselves experienced any big winds they were surprised, on the following day, to find evidence of considerable gales. There were large snowdrifts all over the place and many of the flags had been blown half-over. These drifts were steep snow-ridges frozen almost solid: presumably the wind had started when the snow was still wet after a thaw and this was the result. However, with the light sledges and the large teams it made little difference, merely making the sledges extremely hard to ride, like descending a staircase on a tea-tray. The Big Flag Depôt was passed at 5 p.m. and Scott thought it might be possible to get back to the Base that day, if he could find the flagged way through the crevasses in the approaching twilight. Unfortunately the party, reluctant to stop while the dogs were still pulling strongly, missed the flags and going full-tilt down the steep slope from the Big Flag, struck too much to the left across the valley which, on the way up, had been full of slush and rivulets. They then discovered for the first time how amazingly the features of the Ice Cap could change in a short time—a fact which was later to baffle us on many occasions.

They found that this valley was now a network of small open

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crevasses. Scott's team was ahead. Suddenly in crossing one of these crevasses half his team leaped across it while the others waited undecided on the brink. Those who had jumped over pulled the sledge on for a few feet so that the dogs on the edge were pushed into the crevasse by the sledge. This dragged the others back and soon the whole team were dangling down the crevasse in the darkness. The traces were so tangled that it was impossible to haul out any dog singly. Rymill, always an expert on knots, rigged up a Spanish windlass using a pair of skis, but although a tremendous tension was produced the rope merely cut into the edge of the crevasse. Other methods were equally unsuccessful. Someone then remembered the electric torch in the survey box, and this revealed all the dogs quite happily curled up licking themselves on a ledge twelve or fifteen feet down. Scott was then lowered on a rope and very soon the dogs were unharnessed and hauled up one by one.

Soon after the dogs had been rescued Rymill, who was waiting by his sledge, suddenly put his foot through the snow and, just in time to stop himself slipping through completely, grabbed the handlebars of the sledge and hung suspended for a second or two, wondering if the frail handlebars would bear his fifteen-stone weight. After hauling himself out he examined the hole with the torch and discovered below the thin snow-crust a vast abyss big enough to swallow up his sledge as well as himself. The party turned in at 3 a.m., feeling very relieved that things were no worse. The dogs were not fed in case they should fall down a crevasse in a struggle to get their share of the pemmican.

After a few hours' sleep the party rose on September 3rd to find a rainy, foggy day in which it was difficult to find the way. The whole place seemed changed since they were last there, and although they knew they were less than a hundred yards from the line of flags, since one was found blown down quite near, this flagged route was now quite unsafe, and two of them had to go ahead, roped, to find a way through the open crevasses. Just above Bugbear Bank a box of pemmican was found lying in

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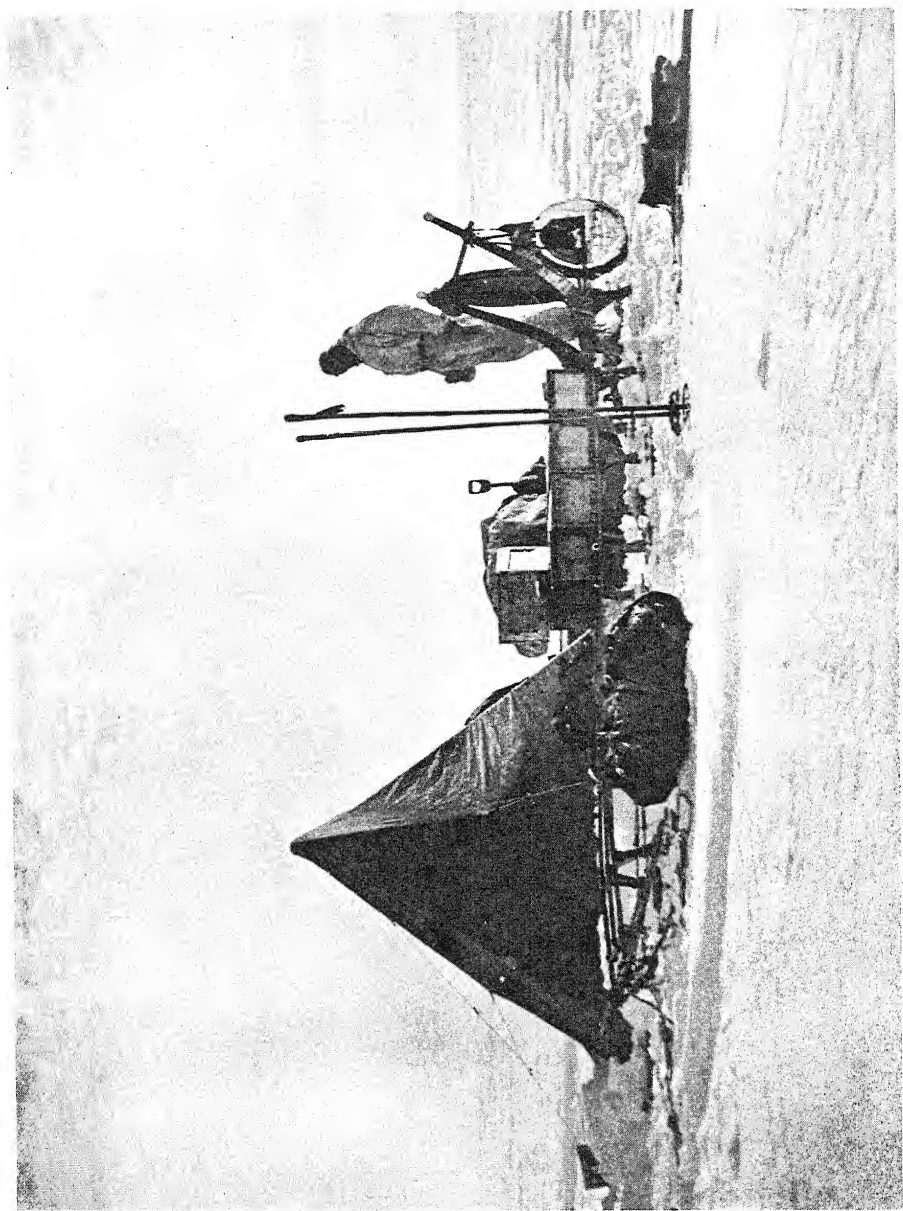
the snow. This accounted for the shortage of dog food; it must have fallen off the last sledge on their way up.

Bugbear Bank was descended at speed with rope drags round the runners and the dogs more or less dragging behind. They were afraid that in the heavy rain they would not have been observed from the Base, but luckily a sharp-eyed Eskimo saw them coming down Bugbear, and just as they were preparing to walk round the end of the fjord to the Base they heard the motor-boat coming across and were soon exchanging stories with Watkins and D'Aeth.

III

It was on September 3rd that Scott's party returned to the Base, and almost immediately preparations were started for another Ice Cap journey. This was a Southern journey by Watkins and Scott down the centre of the Ice Cap to collect data about the meteorological conditions there, and more particularly about the levels of the inland ice between our Ice Cap Station and Nansen's crossing. Watkins and Scott originally intended to go as far as the Big Flag and then to follow down the inside of the coastal mountain belt to the latitude of Nansen's crossing. Afterwards they would strike Northward and eventually reach the Ice Cap Station, from which they would return to the Base. Bingham and D'Aeth were to act as a supporting party for this journey and then, after a few days, follow the line of flags to the Ice Cap Station, where they would relieve Riley and Lindsay, who would return to the Base.

The *Quest* got back from Kangerdlugsuak on September 16th, in time to bid farewell to the Southern Journey party who left the Base on that day. The weather was now peculiarly wet and unpleasant, and from the Base we could see that they were delayed on Bugbear Bank by bad going. Rymill and I were also to set off for the Ice Cap Station in a few days and we should be hard on their heels. The object of this journey was to carry provisions



‘LASHING UP’ IN THE MORNING

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up to the Ice Cap Station to last the people there for another month or two.

On September 21st Rymill and I left the Base. We just got through the sea-ice, which was almost an inch thick in places, and, with the help of Courtauld and Wager, were soon at the foot of Bugbear. Here we used block and tackle for the first time. Five metal pegs were hammered into the ice and the loads hauled up over a pulley. We ran downhill holding on to the rope, while the sledge moved slowly up. This was a great saving of time. Rymill and I tried using seal-skin instead of reindeer-skins for insulation against the ice, but we found them of little use and were very cold. We dropped a few dogs down crevasses, but succeeded in getting them out again. On September 23rd our supporting party returned, and soon afterwards we reached the Big Flag.

The valleys were no longer full of slush and the crevasses were fairly safe. Although we had loads of about a hundred pounds to each dog we made pretty good speed as the going was even and good, but it was very monotonous work. We were following the tracks of Watkins' party, which could be seen plainly winding over the long undulations of the Ice Cap. We covered about 18 miles a day and it was hard work trotting or walking beside the sledges. It is amazing how little things worry you on an exhausting journey like this and how you seem to lose all sense of proportion. For instance, I remember very well that I had a fixed idea that Rymill was taking up too much of the tent. I used to brood over it as I walked along, wondering by what right he cheated me out of my share. It was intolerable, and I planned all sorts of schemes for revenge. A day later we were discussing things in the evening and decided that if ever either of us had a secret worry he must bring it to light before it got on his mind. Acting on this, I told Rymill that I thought he was monopolizing more than his fair share of the tent. He seemed rather surprised and replied that he had been thinking exactly the same of me: surely it was I who had much more than half of the floor

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space. We measured it out and found that each of us had exactly half.

We could tell by the tracks of the party ahead and by messages written in the snow that we were gaining on them, and on September 28th we overtook them. They had changed their plans. Watkins had decided that all four of them would go on to the Station together, then Watkins and Scott would go southward from there while Bingham and D'Aeth would relieve Riley and Lindsay.

We were now using the special winter ski-binding which Rymill and I had designed. It contained no metal and could be worn over soft moccasins or seal-skin boots and yet would give enough rigidity to allow normal turns to be made during downhill running. There was a wide inner leather toe-strap which could be adjusted to fit the footwear. This, together with a strip of double ballata belting, which formed a rigid sole, was screwed down to the ski. A canvas outer covering which was held down at the requisite distance in front of the toe could be laced up along the top of the foot to give extra rigidity and to keep out the snow. This binding was almost ideal, though another time we should make the sole even stronger and enclose the whole in a cotton bag so as to be quite sure of keeping out every bit of snow.

The weather was muggy and warm and visibility very bad after this, and steering was difficult. However, we kept on the line of flags and reached the Station on October 2nd. Riley and Lindsay were very happy and quite loath to leave. Riley's face was quite crimson and with his long beard and hair he looked most odd. There were eight of us to supper at the Ice Cap Station, and as most of us were smoking pipes it was not surprising that the atmosphere became rather thick. The fumes from the primus stoves were so bad that our eyes watered and we found difficulty in breathing. Eventually, after singing a few songs, we had to give it up and go to bed.

On October 4th Rymill, Riley, Lindsay and I left for the Base, leaving Bingham and D'Aeth to look after the Station, while

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Watkins and Scott intended to start southward on the following day. On the way down Lindsay found that when he tried to chop up the blocks of dog pemmican on the snow it merely sunk into the ground. Not having a mechanical mind he put the block of pemmican on the two-gallon petrol tin which contained our supply of paraffin for the journey, and smote it with the axe. The experiment was an entire success as far as the pemmican was concerned, but unfortunately the tin split too and most of our precious paraffin supply ran away into the snow. For the rest of that journey we had insufficient fuel to warm the tents.

Sitting on the sledge to drive the dogs I suffered from cold feet on this journey, and being very inexperienced I crammed as many socks into my moccasins as I could, thinking that this would solve the problem. But my toes were too cramped to move, and very soon I lost all feeling in them and deserved to have lost them completely. I remember once Rymill suddenly remarked on the smell of burning in the tent. We looked about only to find that I had held my toes rather too close when trying to thaw them out over the primus.

I tried letting two of my dogs run with much longer traces while two were kept quite near the sledge, so that my team of six ran in three pairs just as if they were on single trace. This worked well as long as there was a sledge ahead for them to follow, and was a good preparation for the single-trace method of driving. The drifting snow had been increasing daily, till on October 7th it was not possible to travel. The swirling snow formed a thick mist to a height of about 10 feet above the ground, in which it was quite impossible to see the sledge in front. This wind continued for three days, and was so cold that our noses went white as soon as we faced the drifting snow. Oddly enough you do not often notice this yourself as it is quite painless. Your companion says "Look out! Your nose has gone!" and you take your hand out of its glove and thaw out the offending member.

On October 10th we got away again although the snow was still drifting. It was bitterly cold travelling and I remarked in

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my diary that I had never felt so miserable and felt it was quite impossible to get any colder; my feet were quite numb and my nose and all my fingers were slightly frost-bitten. It was little consolation then to realize that frost-bite is nearly always due to ignorance or carelessness, yet that is undoubtedly true.

We reached the Base on October 14th and were much relieved to find that the fjord was still navigable, for it was an unpleasant prospect to have to finish up a journey by walking round the head of the fjord. We crossed by motor-boat, frightfully excited to get back to the Base—though I, at any rate, knew it would not be for long.

CHAPTER IV

The Southern Journey

By J. M. SCOTT

ON October 5th Watkins and I started southward from the Ice Cap Station on a course which would take us to the highest point of Nansen's crossing. We had two good teams of seven dogs hauling loads of about 700 lb., which represented six weeks of full rations for men and dogs. We hoped to get at least 200 miles southward before we had to turn east and then north to chart the inside of the coastal mountain strip from Umivik to our base.

We started fairly well, averaging 8 miles for the first three days on a surface of old wind-drifts covered by 6 inches of powder snow. I drove 200 yards in front of Watkins who, from this distance, could judge the accuracy of my course by watching the track and could check the direction by occasional compass bearings. Watkins wore skis, but I preferred snow-shoes, which were less comfortable but made it easier for me to manage the sledge.

The temperature sank lower every morning and we expected a spell of clear, cold weather. On October 10th we had our lowest day temperature—36° Fahr.; but after that the thermometer rose and our troubles increased.

We had been going downhill ever since we left the Ice Cap Station and now entered a region where the snow was corrugated into hard wind-drifts. Watkins changed from skis to snow-shoes; the sledges upset continually and the two of us wasted a lot of time and energy in righting them again.

Then snow came and filled up the hollows between the ridges.

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The sledges no longer upset, but they were terribly difficult to move. We went into harness and hauled beside the dogs. But the dogs had grown so accustomed to frequent rests while their drivers struggled with an overturned sledge that now they stopped at the slightest check and refused to make any effort until the sledge was started for them once more. They stopped every 50 yards.

We lay up to give them rest and extra food from one of our own ration boxes which we were discarding to lighten the load. Later we increased their ration and tried travelling with one man walking ahead to make a track while the other drove both sledges. But things went no better: the dogs remained slack and the weather grew worse.

From the Ice Cap Station route we had often seen heavy snow-clouds to the South and now we seemed to be in the middle of this bad weather area. We hated these warm snowy days, but still more we feared a sudden cold spell, for we knew from experience what would be its effect on a team of thin and weary dogs.

On October 24th we did a latitude observation at noon when the sun was 12° above the horizon. We had travelled only 95 miles southward, but we felt that we must turn for home. It seemed weak to give up so soon, but we could not take the risk of losing the dogs. If that happened it would seriously modify our programme for the whole year. The East Greenland dogs could never replace these carefully picked West Coast teams. After lunch we set a course for the Big Flag and started home.

We moved quickly till on October 27th the weather suddenly broke, and we felt the strength of the Ice Cap gales which bent the tent-poles and made the canvas crack like a flapping sail. It was rather frightening at night. Outside the wretched dogs crept about looking for shelter, their tails between their legs and their fur heavy with snow. Up above one could just make out a blue sky and a dim sun through a hundred feet of drift. These storms came on without any warning, blew for a day or two and

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stopped again just as suddenly. We had no means of measuring their force, but the wind feels no stronger when one leans out of a racing car at 80 m.p.h.

We travelled when we could, day or night. Once we tried while one of these North-West gales was blowing: but the sledge skidded round sideways on the hard surface and frightened the dogs up-wind till their eyes filled with snow and they turned to run before it. We had a lot of trouble re-pitching the tent.

My distance log gives an idea of our spasmodic progress:

Oct. 27th. Wind—no travel.

„ 28th. Wind—no travel.

„ 29th. 14.8 miles in 7 hours (took $5\frac{1}{2}$ hours digging out tent and sledges).

„ 30th. 200 yards.

„ 31st. 10 miles—from 7 p.m. till 1 a.m.

We had no opportunity to take observations and came out to the coastal mountains among bad crevasses about 20 miles South of the Big Flag. We abandoned one sledge and travelled North-East till on November 10th Watkins picked up a red cotton thread which showed us that we were near the line of flags. Three hours later we met Chapman's party on their way to the Ice Cap Station. Next day we reached the Base with all our dogs and one day's food in hand.

We had been away since September 15th. From the Ice Cap Station we travelled South for nineteen and a half days, lying up for five of them. Of the eighteen and a half days we took to get home from there we spent seven in the tent.

The scientific results of the journey were small. We took a series of aneroid observations which showed that the altitude of our Southern turning-point was 200 feet less than that of the Ice Cap Station: and we took weather observations three times a day.

On the way South we passed over a series of valleys about 100 feet deep and 1 mile across. Viewed from the trough they appeared to be crescentic, but this may have been an optical

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effect. When we turned towards the coast we passed over, as on the Ice Cap Station route, long undulations as much as two miles from crest to crest. Sixty miles inland these seemed to run parallel to the line of the coast for an indefinite distance each way; but further out they began to curve round as if modified by the shape of the long fjords. From 40 till 20 miles from the coast we passed obliquely over the long valley which runs down into Ikersuak Fjord and here we experienced the strongest winds.

We found out many practical details which helped us later on. The autumn, like the other transitional season, the spring, is apt to upset the most careful calculations. The storms start very suddenly and in them one can only travel down-wind. In such weather the dogs must be loosed at night, otherwise they will bite themselves free of their harness or get frozen into the snow.

The tent should be pitched at once when a storm appears. In a strong wind it is difficult to pitch it well and its loss would almost certainly prove fatal.

Watkins' double down bag which he could dry easily was much more comfortable than my deerskin sleeping-bag, which froze so stiff by the end of the trip that I took half an hour to thaw my way into it. This was a fertile source of amusement for Watkins, but it was annoying for me.

At high altitudes a primus stove burns badly and care must be taken that the tent is well ventilated to prevent the formation of carbon monoxide. One cold evening when the tent was well sealed up I was kneeling over the cooking-pot when, without any warning, I lost consciousness (so Watkins says), threw my limbs about and then lay still. Watkins managed to put out the primus and drag me outside, where presently I came to, feeling rather ill and very cold.

The man-food, with its large percentage of fat, was excellent and more than sufficient in cold weather. On this journey, and in fact throughout the year, Watkins and I were never frost-bitten. The dog's food, 1 lb. of pemmican and 4 oz. of pure

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fat, was probably the most nourishing they could have had for its weight, although it gave them diarrhœa. It should be bought already divided into separate rations, for otherwise it is difficult to cut up and distribute accurately.

The lifelessness of the dogs in the middle of the journey puzzled us a great deal, but it may have been due to a combination of many things. After months of idleness they had started hard sledging on August 11th and had worked almost continuously ever since: they were changing their coats for the winter: they were discouraged by the sudden return to full loads at the Ice Cap Station: they were enervated by lack of fresh meat: their feet were tender from the sharp wind-crust: they were bored by the lifeless Ice plateau.

Whatever the reason may have been we were grateful for it afterwards. Had we got 200 miles South in the first three weeks it would have been very difficult to get back again.

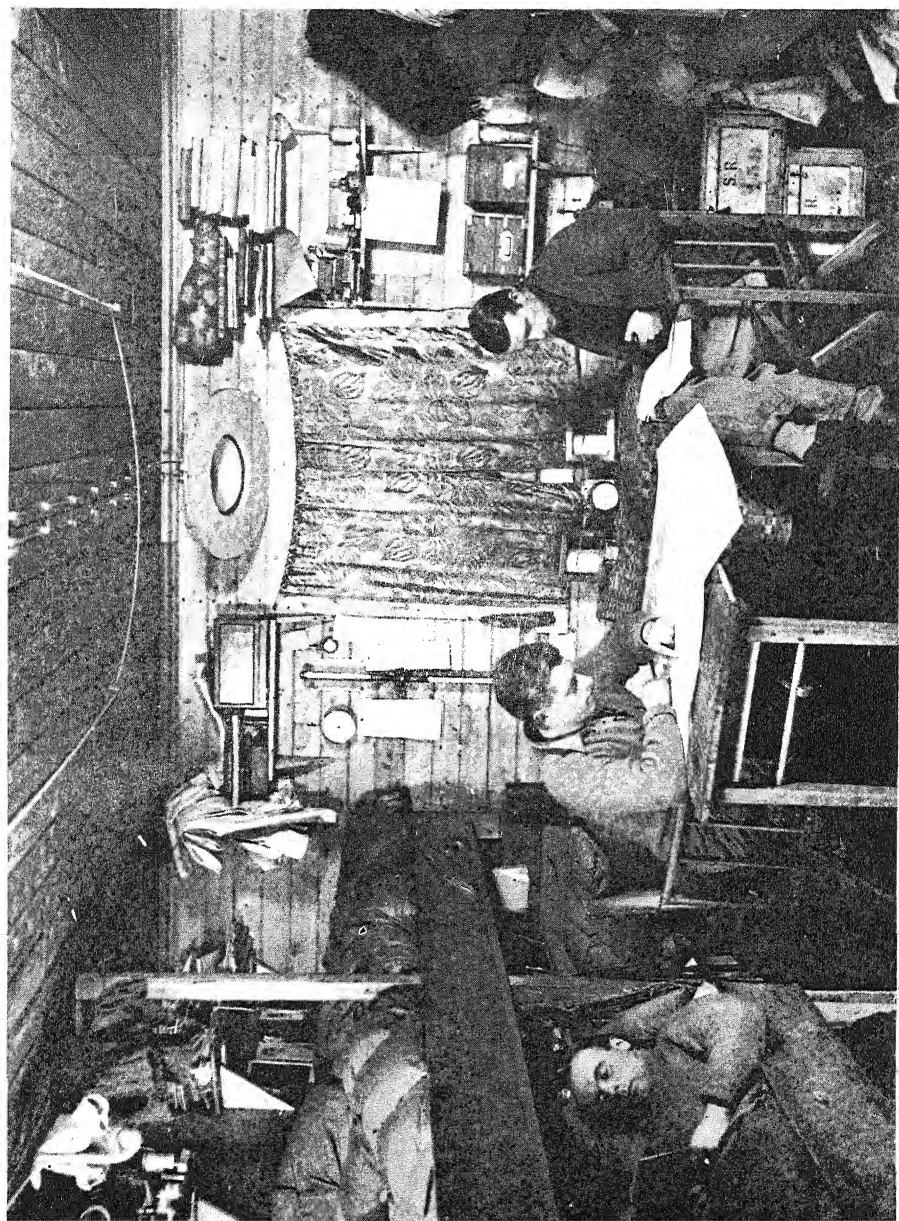
CHAPTER V

Autumn at the Base

THE Kangerdlugsuak party returned on September 14th, and found the Base like a well-organized country house, with central heating, electric light and almost all modern conveniences. Everything was beautifully clean and in its right place, and the Eskimo staff, equally immaculate, were installed in the attic. The natives did all the cleaning, laid the table, washed up, and did a vast amount of sewing. When we sat down to meals they brought the dishes round to the left side as if they had been used to it all their lives. Lemon gave all his orders in Eskimo, and they were promptly obeyed—it all looked too easy.

Actually, to reach this pitch of efficiency, Lemon had had anything but an easy task. Since we had left the Base every moment had been occupied. We had all gone off in a hurry and left everything completely disorganized. Trouble started when, soon after the *Quest* had left, the dogs swam ashore from their island and started to eat everything edible they could find, and to a "husky" the word edible has a pretty wide interpretation. They stole a number of seal-skin boots and skins which were drying outside the Base; they robbed Lemon's store of fish, and broke into the whale-meat pen. The Base Log records with monotonous regularity: "Dogs broke into whale-meat pen; mended pen." When they chewed lumps out of the wire netting in order to get in, Lemon gave it up and let them run loose; after that they returned no more to their island.

It was extraordinarily difficult getting enough food for the dogs. There were very few seals about at this time, and the



INTERIOR OF THE BASE HUT. BINGHAM, STEPHENSON, RILEY AND D'AETH

AUTUMN AT THE BASE

Eskimos seemed unable to secure them. We had bought several when the *Quest* first arrived in the fjord, and had put some of the meat under ice; but that was soon finished. In the trammel net, which was set across the mouth of a stream near the Base, we got a few sea-trout, and a large number of bony sea-scorpions. The Eskimos caught a good many fish with their hands in the stream which flowed down from a chain of lakes in a valley not far from the Base. While doing this they would get tremendously excited, screaming and rushing up and down the stream like children. They would also catch sea-trout with long spears up in the lakes. Though these fish were most acceptable for man-food there were not nearly enough for the dogs.

The day the *Quest* sailed for Kangerdlugsuak three girls, beautifully dressed but rather shy and giggling, arrived at the Base and offered to clean the place up. Lemon got them to scrub the floor of the Base, to sew the curtains, and to do the cooking, while the men, who soon arrived in their kayaks, carted wood, and did other heavier jobs. The girls wanted to stay, but as food was short, and Lemon didn't want to compromise himself—chaperons being rather scarce in this district—he set off in a motor-boat to take them home. Unfortunately the outboard motor-boat broke down and he had to row 4 miles home. This motor was a continuous source of trouble, and Lemon spent many hours repairing it.

Our permanent staff consisted of Arpika, the oldest and most sensible of the girls; Gertrude, the prettiest, who expected to be made a fuss of and at first only worked when she felt like it; and Tina, Gertrude's younger sister, an incredibly sluttish and dirty girl who was given such jobs as cleaning the pans, peeling potatoes, and washing up. The party was completed by Gustari, a youth of about 18, who helped with heavier jobs such as carrying up coals for the kitchen stove, and ice for our supply of drinking water. Very soon he became extraordinarily efficient, learning to run the outboard motor, and even to start the charging engine on his own.

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Lemon dare not go very far from the Base as he was afraid of interrupting the meteorological observations, which had to be taken every three hours, and the wireless programme that he had planned. For the meteorological observations he had to read four thermometers, maximum and minimum, and wet and dry bulb; to look after an automatic thermograph and barograph; to read the barometer; to note the direction and force of the wind as recorded on the cup anemometer; to observe the type and amount of cloud, and to fill in a general summary of the day's weather. His wireless work consisted of working to the *Quest* three times each day, also to Angmagssalik, and occasionally to an amateur in England. Owing to the vagaries of the ether he found it quite impossible to communicate with the Station at Aldershot, which we had official permission to work.

Eskimo men came over to the Base every few days and stayed to hunt seals at the head of the fjord, though they were almost invariably unsuccessful. However, there was plenty of manual work to be done, and as long as it was not of a monotonous nature they seemed very willing to do it, not only for the meals they were given, but to satisfy their childlike curiosity. As it was impossible to take the staff home each night they now took possession of the attic. It was difficult to feed them, for soon even the cod, which were plentiful when we first got to Greenland, failed us.

At the end of August Lemon was busy fitting up the dark room and installing a sink; he was also putting in electric light throughout the Base, which would be run off the charging motor. The wireless transmitter frequently broke down, and this alone occupied several mornings. On top of all this he had some trouble with the staff, and decided to reduce it till there were more of us back at the Base. Gertrude, who had ceased to do any work, was given notice, but she refused to go home, feigning illness. Lemon prescribed a large dose of castor oil. She took it, licked the spoon both sides, and asked for more! She had never tasted anything so good. Next day Lemon took her home in the motor-boat regardless of her tears.

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It was very difficult trying to master the language. In the first place he couldn't get them to understand that he was trying to learn it. He would point to a thing, hoping that they would give him the Eskimo name, but they would just giggle, thinking it was some new kind of game. Later on they improved, and got so interested that they would go on giving him the name of everything they could see, and were quite hurt when he didn't write it all down. He soon realized the extraordinary complexity of the East Coast dialect. The language spoken by the Eskimos from Alaska right across the Canadian Arctic to Greenland is much the same, though there is considerable local variation. Thus the Angmagssalik dialect is very different from that spoken on the West Coast of Greenland. The latter is hard with a good many "k" sounds and guttural noises, while the Welsh "ll" occurs often; but the East Coast is a soft language, sounding almost like French, and although many of the words end in "k," this letter is not pronounced. They find great difficulty with "l" and "f," usually pronouncing them as if they were "d" and "p" respectively, while "r" beats them altogether. Lemon, though very slow at first, soon got on much better and could tell them anything he wanted done.

The Eskimos had somewhat specialized ideas of cleanliness. When they were told to wash up the cups and saucers they threw them out of the window—luckily all our crockery was made of tin—and the dogs licked them nice and clean. The natives were quite hurt when told to wash them again. However, this was very early in the expedition; later on we were not nearly so fussy. He also found that it was quite impossible for them to remember anything from one day to another. The kitchen stove would have to be relit six or seven times each morning, while coal and water were invariably "perangera." (This was a most expressive and much-needed word signifying "there isn't any"; it is used to say there are no seals about, as well as to break the news—a few minutes before lunch-time—that the water-pan is empty and no ice has been brought up from the foreshore. The real spelling

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is "parangilak," but I have written it as pronounced.) Lemon always had to be very careful not to hurt their feelings, for they were very prone to sulk, weep, and have hysterical fits.

During August the weather was simply wonderful. The mosquitoes had gone, there was no wind, and only occasional showers of rain. It was only necessary to wear a pair of shorts and a shirt in the brilliant sunshine. But at the end of August a sudden gale sprung up which removed a tarpaulin covering some valuable equipment, and blew all our supply of dried fish off the roof. The day after this first manifestation of evil weather, September 2nd, Watkins and D'Aeth reached the Base, having flown from Kangerdlugsuak, and the Ice Cap party were expected daily. They were seen next day coming down Bugbear Bank, and reached the Base that night. On September 5th Watkins and D'Aeth made the last flight of the summer before the aeroplane was put on skis.

Lemon now thought he deserved a holiday, and set off with Watkins and Scott in the motor-boat for Angmagssalik. The first attempt resulted in failure as the engine was full of sand, but on September 8th, in heavy rain, they tried again, and were away for three days. From now on no more salmon were caught in the nets, but once more the Eskimos brought large numbers of cod; so many that we could afford to eat only the roes, and give the rest to the dogs. Any spare time was spent in carrying loads up Bugbear Bank for forthcoming journeys.

On September 14th the *Quest* got back to the Base, and we were all together again, except for Lindsay and Riley who were at the Ice Cap Station. To celebrate this, and by way of a farewell dinner to the Captain and officers of the *Quest*, we had a dance at the Base, for which Lemon, with the help of the staff, managed to produce the most excellent four-course dinner. The next day the *Quest* set off for Reykjavik to get the extra parts for the aeroplane, and Cozens went with her to see that nothing was forgotten. He also had a vast number of things to buy for us in Iceland. It isn't often that an expedition gets a chance of buying things

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after having had time to find out what has been forgotten, and if Cozens were to buy all the things on his list he would be kept pretty busy.'

The same day, September 15th, Watkins and Scott set off on their Southern journey, with Bingham and D'Aeth who were to relieve Riley and Lindsay at the Ice Cap Station. Four others went to help them to get their sledges up Bugbear Bank. It had turned rather colder to-day and was raining, but it rather shook us when the natives said that there would be no more fine weather till next April.

After this, with only three of us at the Base, there was a certain amount of peace. When the Base was crowded it was quite impossible to move. Unfortunately the living-room was at the far end of the hut, and we had to pass through the wireless room and kitchen each time we went in or out. Another disadvantage of the hut was that the living-room was not quite wide enough. When sitting at table for meals, or working, there was no room to pass between the chairs and the bunks. There was also very little room to keep anything. Our bunks were only 6 feet by 2 feet 6 inches by 3 feet; and the more untidy of us used to keep everything in a heap on the bunk during the day, and then heave it all out on the floor at night. Any clothing or kit which was not used daily was kept in the loft which ran the whole length of the hut. The Eskimos had appropriated one end of this, and rather resented our turning the place upside down.

On September 17th Lemon and I went on a visit to the nearest Eskimo settlement, called Nettui, about 6 miles down the fjord. We went in the boat, but as usual the motor broke down and we had to row most of the way. There was little ice on the fjord, what there was consisting chiefly of large bergs which had grounded there. By the autumn the ice is eroded and melted by the warm surface water into many strange and fantastic forms. You see mushroom-shaped bergs supported on a fragile icy stalk; you see wedding-cakes, cathedrals, cities perched on hill-tops, and all kinds of animals. For several weeks a wonderful double-

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arched iceberg nearly 100 feet high had been stranded near the Base. Just as I was taking a photograph of this iceberg the arches collapsed, and I was lucky enough to get a series of photographs showing the various stages of disruption. On this journey night fell before we reached the settlement, and we were thankful when we ran in behind some low islands and were told that we had reached our destination. We put up our tent, and then went visiting the three or four Eskimo tents which comprised the settlement.

The families who had decided to winter together in the same winter-house, after spending the summer in different parts of the coast, had joined forces a month or two previously and were now busy repairing the stone structure in which they were to spend the winter. In the first tent was an aged widow called Potardina (spelt, I believe, Bartholamew), her son, and four of her daughters together with their respective families, as well as an orphan boy she had adopted. Gertrude, being Potardina's third daughter, soon took us into this tent and introduced us. The occupants had already gone to sleep, but were delighted to see us and produced some cold cod and sugar from under the sleeping-bench. Although ice was forming on the sea, it was warm enough inside. The tents are made by hanging seal-skins sewn together over a fan-shaped framework of drift-wood poles, while heavy stones on the extreme end of the skins prevent the wind doing any damage. If the family are fairly well-to-do (that is, if the men are good hunters), there is a translucent curtain hung across the doorway made of the intestines of seals neatly sewn together in parallel strips. Standing in the high narrow doorway the tent opens out before you. At the back, across the whole width of the tent, is the wooden sleeping-bench raised on stones about a foot from the ground. As the occupants lie on the bench their feet run up to the acute angle between the tent-roof and the ground, so that a minimum of room is wasted. At the head of the sleeping-bench there is ample room to sit up, while in front of it one can walk about freely. Layers of seal-skins on the bench cover its irregularities,

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and keep out the cold air from below. Immediately in front of the bench are the soap-stone blubber lamps—one to each housewife—and above them the wooden frames for drying clothes. There were four lamps in this tent, burning with a clear smokeless flame, and giving out ample light and warmth.

The tending of these lamps requires the utmost skill: the soap-stone lamp is semicircular in shape, with a shallow depression deepening towards the curve; along the straight side of the stone is a regular line of wick consisting of a particular kind of moss; small bits of seal-blubber are placed in the depression of the stone, which is tilted so that the oil just reaches the wick. The lamp has to be tended continually so that it doesn't smoke or burn too strongly. Suspended from the wooden drying-frames are the large cooking-pots—now made of tin, but in the old days of soap-stone—which can be slid along until directly over the flame. In these pots the seal meat or fish is slowly boiled. In the open space between the stoves and the doorway were some boxes that we were told to sit on when we came in. Lemon produced his vocabulary, and conversation started. We were asked our names, all of them, and then our ages: the latter being counted up in tens and the remainder on fingers. They seemed very jovial people, always ready to burst out laughing, and after the first few minutes showed no sign of shyness.

After visiting the other tents, and receiving in one a tin of blackberries and in another a bit of cold seal-meat, we returned to our own tent, having invited all the children to come and drink cocoa with us. Eleven of us crowded into a tent originally intended for two, and abandoning all conversation gave ourselves up to the delight of ship's biscuits and sickly cocoa.

When we got up next morning we found all the Eskimo men working on the winter-house. The permanent part, which incidentally is common property, was just a rectangular wall about 6 feet high, solidly built of boulders. Entrance was effected by a low stone tunnel, while in the wall on each side of this tunnel was a square hole for a window-pane. The Eskimos,

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under the direction of Arpika's father, an aged man called Nicodemudgy, were clearing out the inside of the house, which was paved with flat stones. The wooden parts of the house, consisting of the window-frames, the beams that support the roof, the roof-beams themselves and the sleeping-bench, are the property of certain men, and these were being fitted in so that the house could shortly be ready for occupation. They seemed to be working against time, so we soon left them to their job and returned to the Base.

The dogs were now at large over the country-side, but as there was nothing there for them to hunt they stayed round the Base, keeping very much to their own families. One could soon tell on what bit of ground a certain team would be. Some dogs were so friendly that they always came up to be petted whenever anybody appeared, while others were so wild that they had to be rounded up whenever they were wanted for a sledge-journey. After Rymill and I had gone up to the Ice Cap on September 21st there were only five dogs and nine small puppies left at the Base. Of these puppies one litter had been born during the return of Scott's Ice Cap party, and we had discovered the existence of the other by hearing strange squeaking noises underneath the floor of the hut. The father of this litter, a large Alsatian-like dog called Pinusok, used to bring lumps of seal-meat up to his mate from the foreshore where the dogs were usually fed.

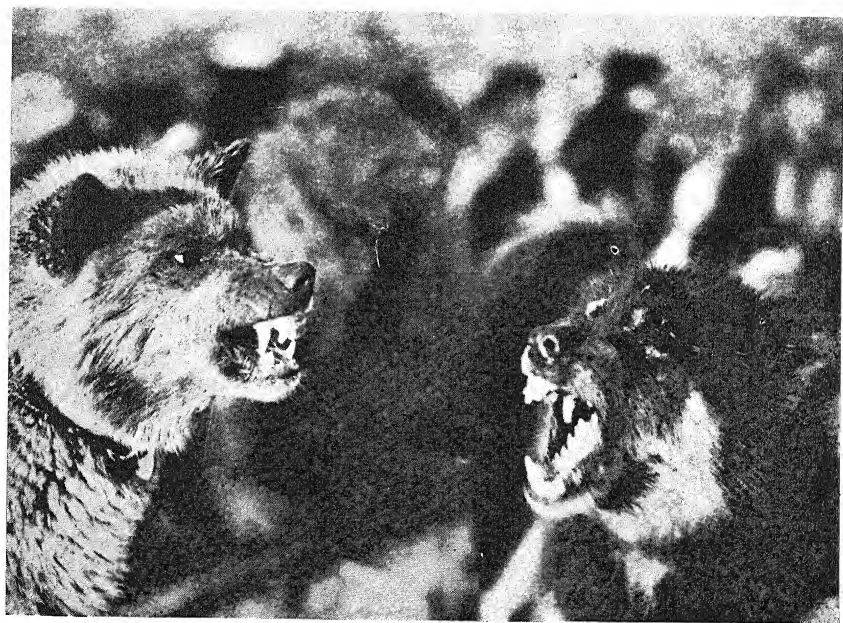
By September 21st there was half an inch of fresh ice over the fjord, and when the supporting party of Rymill's journey returned they had to break a way through with the oars, fearing at times that the boat would not get through at all. As it looked as if navigation would soon cease, the Moth was towed round to the bay on the other side of the Base, where we hoped soon to erect a shed in which to house the machine during the winter.

Stephenson thought that he would map the coast South of the Base before the ice grew too thick, for although the heads of the fjords had frozen over there was still plenty of open water out towards the sea. Apparently the best way of doing this was to



(a)

PINUSOK, THE BEAUTIFUL



(b)

AN ARGUMENT BETWEEN TWO LEADERS

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borrow an umiak complete with Eskimo crew and pilot, as one would then have expert local knowledge as well as the advantage of efficient locomotion. So on September 27th Nicodemudgy duly appeared with his umiak, rowed by four girls. The umiak is a large flat-bottomed boat consisting of a drift-wood frame covered over with stout seal-skins. It is used for the conveyance of all property: dogs, tents, furniture and children. When the natives are moving house, a process which continues irregularly right through summer and autumn, the men go in their kayaks, while the women and children follow in their umiaks. The latter are rowed by the women with oars like a ping-pong bat tied to the end of a pole, and they use a short jerky stroke which is extremely funny to watch. The boat is usually steered by an old man who sits in the stern.

Two miles down the fjord the swell was so bad that they had to stop. Stephenson had intended to go straight away about 40 miles South of the Base Fjord, and then to return slowly, mapping as he went; but as the weather looked too bad to continue further he landed and started to survey. Next day there was a thick fog and snow, and Nicodemudgy got completely lost trying to cross the fjord within a mile or two of his home. It snowed solidly then for three days and the swell was so bad that it was quite impossible to cross the fjord. On October 1st, having reluctantly given up their original scheme, they returned and started measuring a base in the fjord for a map on the scale of 1 inch to the mile.

As they got back to the Base the *Quest* arrived, having called at Angmagssalik on her way from Iceland. She had had a very rough trip, being stuck at the mouth of Sermilik Fjord for a night and a day in thick fog. They had had to turn off the engine and listen in the darkness for the swish-swish of the waves breaking on the icebergs. In the darkness of October nights these icebergs are a peril greater than sunken rocks. And the additional hazard of fog made their position most precarious. They had then been unable to find the mouth of the fjord, and not know-

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ing at all where they were had been surprised to meet two kayaks far out to sea. The swell was so great that the kayaks had to be hauled on board with ropes tied fore and aft. Oddly enough the two men were no sooner on board the *Quest* than they were violently sea-sick. On recovery they told the Captain that he had gone far to the South of our fjord, and though no land was visible they were able to guide him straight to the Base. The good weather seemed to have finished, and more snow fell while unloading the boat. Before the *Quest* went, the steward came to the Base and taught us how to make baking-powder bread. This was a great asset, and for the rest of our stay in Greenland the Eskimos did at least one baking every day.

On October 3rd the *Quest* left our fjord for good. This is probably the latest that a ship has ever remained on the East Greenland coast.

From now on we were all busily preparing for the winter. Hampton started to build the hangar, using the packing-cases in which the aeroplanes had arrived. As he needed the casing of the second aeroplane, that also had to be unpacked and rigged. With no derrick it was difficult to support the weight of the machine while the under-carriage was being transferred from floats to skis. To accomplish this Hampton collected everybody who was at the Base, and in a somewhat Heath-Robinson manner the weight was lifted. Unfortunately, at the critical moment, the undercarriage moved and the heavy machine fell to the ground, pinning several people beneath it. By a lucky chance no one was hurt.

At the end of September we had had temperatures of $+44^{\circ}$ F. in the shade, but by October 7th it was a good ten degrees colder, though it was still warm enough in the sun. It seemed that winter was no great distance ahead. The seals were coming back too, but were by no means common yet. Cod had been our chief food for the last few weeks, though we got plenty of seagulls. These birds—Glaucous and Iceland Gulls—were very plentiful in the fjord. We would go out in the boat and wave a

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white rag to attract them within range. When roasted in the oven they were extraordinarily good.

On October 5th Lemon returned from Angmagssalik with a motley collection of a dozen or so dogs he had bought there. Outside the fjord there was now very little ice and he had not been stopped at all. On the night of his return Lemon got the wireless going, and we were horrified to hear of the tragedy of the *R101*. Although we heard of its loss we were not told how the disaster occurred. This was typical of our receiving set. We would hear enough to make us all agog to hear more, and then the thing would shut off completely and we would hear nothing but a series of loud explosions.

On October 7th, a crisp frosty morning with brilliant sunshine, the fjord was completely frozen over. The boats were hauled up on to the land, and we thought that soon we should be sledging. Next morning those at the Base woke up at 6 a.m. to find their bunks heaving with a curious motion, and the whole air filled with a strange roaring noise. A violent gale was in progress. Immediately they rushed down to secure the boats which had been left upturned on the shore, and to tie down the half-finished hangar. They secured the machines to heavy petrol drums and returned to breakfast. By this time the gale had reached a velocity of 100 m.p.h. Luckily when the *Quest's* crew were at the Base, a week earlier, the hut had been made secure for the winter by thick wires passing over the roof and fixed to pegs each side. As it was, the whole hut swayed horribly in the more violent gusts, and the cups and plates jumped about on the table. Outside the sea was lashed into a furious spray a hundred feet high, while enormous waves broke with a shower of surf against the great icebergs, making them rock like corks. By 9.30 the wind gauge recorded a velocity of 129 m.p.h. At this stage the anemometer could stand no more and the top blew off and went into the fjord. All the long morning the wind steadily increased and the maximum velocity was not reached till 3.30 when the 70-foot wireless mast tottered and fell with a crash that was

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hardly heard in the general din. The ice broke up, the sea spray was driven against the hut, and anyone who tried to crawl about on all fours was literally blown away.

As soon as the force of wind abated Hampton crawled down to the hangar again. On the way a huge sheet of aluminium passed him trundling along in the wind. Luckily the hangar was in a very sheltered place, but he was amazed to find that both machines were still safe, though on one side the hangar was leaning over at a dangerous angle. On his way back he saw that one of the large sea-plane floats had been blown right across the headland to find an anchorage in the whale-meat pen. Had Hampton not taken the Moth from the other bay three days previously it would have been smashed irrevocably.

On the shore in front of the Base the wind had done a good deal of damage. The tide had been blown in several feet higher than usual, and while fishing-nets were dragged over ice-floes, boxes and petrol-tins were floating all over the bay. Luckily the wind was inshore, otherwise the loss would have been great. The tarpaulin, originally covering the stores, had been blown away and all the boxes were coated with several inches of frozen spray.

By 7 p.m. the gale died. At first it had been amusing, then serious, and later terrifying; an exhausting experience, with the house shuddering and full of strange noise. During the lulls, and eventually when it died down, on the Ice Cap massif black deluges of snow swept across the horizon, pouring over the valleys and being blown up into the sky again. The temperature had gone up from 20° to 30°, and later up to 50°, though during the week before the maximum had been 34°.

Next day the work of repairing the damage had to be started. The outside of the hut was sheathed in ice. Objects of all kinds were strewn about in complete disorder. Down on the shore a line of icebergs and debris of all sorts had been left by the receding tide. Just as the work started it began to snow, and a frantic search for valuables had to be organized before they were covered up and lost till the following spring. This gale had removed



A FÖHNGALE APPROACHING FROM THE ICE CAP

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every bit of new ice from the fjord, and taking advantage of this they immediately started ferrying loads across for the next journeys up the Ice Cap. Meanwhile, Lemon re-rigged the wireless masts with six sections instead of nine. Luckily the natives at the neighbouring Settlement had moved into their winter-house before the blizzard started, otherwise they and their tents would have been blown into the sea.

On October 14th Rymill and I returned from the Ice Cap with Riley and Lindsay, and immediately we started preparations for the next Ice Cap journey. The blizzard had changed the appearance of the fjord, for most of the big ice had been driven out to sea. From the top of a hill near the Base we could see open water for miles, where in July there had been a wide strip of solid pack.

The fine cold weather set in again, and the fjord started to freeze over once more. Each day load after load was carried up to the glacier-foot by portages on the rocks at the far side of the fjord. As the rocks were snow-covered and sheathed in ice this was dangerous work, and a new way up to the rocks had to be found. Several times when returning at night from the glacier we were afraid we would have to spend the night firmly embedded in the new ice. It was already several inches thick, and our only hope was to follow the way we had come in the morning. More than once we passed the Base and found ourselves making for the open sea before we heard the barking of the dogs or saw a welcome light flashing from the wireless masts.

Winter was now approaching rapidly, and the average temperature was 15°. Coming out of the hut in the morning, feeling the crisp invigorating tang of the air and seeing the pink clouds reflected in the snow of the distant mountain-tops, it felt almost like Switzerland. However, there were still only 6 inches of snow, which was not enough for ski-ing in such rocky country. Besides, we had little leisure for winter sports. Seals were more plentiful, but not having kayaks we were unable to hunt them. We tried to shoot them from the dinghy, but she bobbed up and

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down so much that it was impossible to shoot straight. There were still cod about, at any rate till the middle of October.

By the time the next journey was ready to start, both 'planes were rigged and neatly packed in the hangar, which was complete except for the roof. The ice was forming thickly all over the fjord, and we hoped soon to be able to fly.

On October 26th six of us, with a supporting party of three, left for the Ice Cap, to take food to the station and to relieve D'Aeth and Bingham. Watkins and Scott had not yet returned from the Southern journey, and Riley was left alone at the Base.

CHAPTER VI

A Winter Journey

WHEN Riley, Lindsay, Rymill and I had left the Ice Cap Station on October 4th Watkins' orders were that as large a party as possible should start off from the Base as soon as they could, and take the wireless set, and stores to last till the end of March, to the Ice Cap Station. The three-day gale that delayed us on our way down made us all the more anxious to get this journey over before the bad weather set in, but the preparations for a journey of this size are multifarious, and it was ten days before we were ready to start.

Courtauld had already seen that most of our stores had been conveyed to the glacier-foot. This included all the wireless equipment for establishing a transmitting and receiving set at the Station, of which the charging motor alone weighed 150 lb. and had to be carried up in one case. The pemmican, to save both time and weight, had been taken out of its tins and packed in cotton bags hastily stitched together by the Eskimos, though subsequently this turned out to be a very mixed advantage. I was to be in charge of this party, the size of which was only limited by the number of dog-teams available. By enlisting a scratch team of local dogs from Angmagssalik we managed to produce six teams, though some of them looked as if they had escaped from a circus.

Stephenson and Hampton were to relieve Bingham and D'Aeth at the Ice Cap Station. It was thought that as Hampton had already got both machines in running order he could now be spared, there being no further use for the aeroplanes till the fjord froze over firmly. We hoped at this time that we should be able to

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change the personnel at the Station throughout the winter by aeroplane; then when D'Aeth returned from the Station he could ferry up Rymill and me to take the place of Stephenson and Hampton. Lemon would have to accompany my party to fix up the wireless at the Station. Courtauld and Wager made the number up to six.

Before we could start, a vast amount of equipment had to be made and collected together. Rymill and Courtauld took the motor-boat over to the Southern Settlement to buy dog-whips and seal-skin line. Handlebars had to be made and fitted on to the sledges. I spent several days fitting winter-bindings on to our skis, while everyone at the Base spent any spare time splicing dog-harness and traces. Others camped across the fjord, carrying the rest of the loads up, while Lemon stayed at the glacier-foot working his wireless set to Cozens at the Base. Hampton and anybody available worked at top speed on the hangar for the aeroplanes, so that they would be safely housed before the gales started.

The success of this journey was threatened at the outset by the following circumstances: only one out of the six of us had had any previous experience of dog-driving, and that a mere 300 miles; the wireless set monopolized a complete sledge, thus making all the other loads unusually heavy; three of the dog-teams had never been driven since they were bought, while the weather was rapidly deteriorating and the days shortening. It was not till October 25th that we were ready to start and then a sudden blizzard delayed us for another day. However, it meant that we would have a complete day's rest before the journey: an ideal always aimed at but hardly ever realized.

I am giving the account of this journey almost straight from my diary.

October 26th. Several hours wasted this morning trying to round up the wilder members of our circus. In some cases we had to drive them on to the end of a point and even then they would walk out into the water rather than submit to being caught.

A WINTER JOURNEY

Cozens spent all day ferrying men, dogs and kit, across the fjord. Luckily yesterday's blizzard opened up the fjord which had all but frozen over, otherwise we should have had to walk right round carrying loads. I set a large fox-trap I had made to catch one of my best dogs, which for some obscure reason went native at the end of the last journey and has refused to let anybody approach him since. He had done considerable damage raiding the depôt and eating ski-straps, boots, etc. He entered the trap after taking the meat and was strong enough to force his way out again. As I was leaning over the trap to reset it the staple came out and the lever of the door hit my face, loosening all my front teeth.

Luckily yesterday's gale was not a bad one, and much to our surprise most of our equipment was where we had left it. But two tents had blown down and one had vanished completely. We tied the dogs up at the foot of the rocks and Riley returned to the Base for another tent and a few things I had forgotten. Luckily an Eskimo brought two seals yesterday, so we could give the dogs and ourselves a good meal of fresh meat to start with. We have been very short of seal-meat lately at the Base, though several fat seals have been lying out for some days on the firm new ice at the head of the fjord.

The wind has blown all the snow off the glacier, leaving it glassy smooth, giving little security for tents. We pitched them on what snow the eddies had left and piled a vast weight of cases on the flaps. The supporting party—Rymill, Cozens and Lindsay—are in a single small Alpine tent. I hope we shall have their help till the Big Flag. Overcast to-night and warm: probably a blizzard to-morrow.

October 27th. Big wind in night. Alarm off 4 a.m., out at 5.45 just as it got light. We collected the dogs and the final loads from the shore. I saw my wild dog asleep with the rest of the team and, stalking him behind a rock, just got hold of his tail as he made off. He was too heavy to lift clear and bit my thigh. He seems glad to be with his family again and is as docile as he

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was before. The leader spent the rest of the day putting him in his place. Wind increased after lunch and reached gale force. The tent Lemon and I are sharing went down twice. Riley managed to get over with the boat, though the waves came right on board and the spray short-circuited the outboard motor.

October 28th. A terrible night. Turned in at 4.30 with the wind blowing furiously. We could see the fjord lashed into white horses below us, and clouds of snow whirling into the sky above us on the Ice Cap.

We drove a metal spike into the ice to hold our tent and put 600 lb. of cases on the flap. By 9 p.m. the wind was terrific. The tent canvas strained and flapped like a schooner's mainsail, and to speak to each other across a gap of only a couple of feet we had to shout as loud as we could. Every few minutes tins of dog-fat and other objects came tinkling down the ice past our tent and over the edge. Our camp was on a slope of the ice. My tent was the lowest down. Just below our tent the ice fell away, getting steeper and steeper till it finished in an ice-shoot over a frozen waterfall into the rocky gorge below the glacier. We dressed and put on our boots, knowing the tent could not stay much longer. Several times the tent-opening blew undone and at about 11 p.m. the end came. After a gust of prodigious force the outer cover was whirled up on one side, and soon blew away, scattering boxes over the edge as it went. We hung on to the poles of the inner tent for a few seconds, being lifted bodily off the ground. Fearing it would carry us down the glacier we let it go. Luckily we had put any loose articles into a kit-bag and this we covered with ration boxes. We lay in our reindeer-skin bags for a few seconds wondering if it would be better to risk being blown down the glacier inside the bag or to try to crawl to the other tents.

I warned the others to stand to in boots and windproofs though their tents were pitched on better ground and might weather the gale. I got into a tent with Hampton and Courtauld after piling more boxes on to the flap. The floor space inside was very

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restricted, and we had to turn over by numbers, all facing the same way at the same time. The wind got even worse in the early morning and we thought the tent *must* go. At every big gust all three of us were lifted right off the ground as the tent swayed with the wind.

At daybreak the wind stopped all at once. It was as if the earth had suddenly stopped spinning, and we realized how tremendous the nervous strain had been. The damage was surprisingly little. Our tent and a few odds and ends had disappeared. The heavy charging motor had moved several hundred yards down the glacier. The stores had been scattered but not damaged. An ice-axe had blown through Stephenson's tent. I decided to move the whole camp down on to the moraine; then we could use the rocks to tether the tents while the stores were being sledged up the glacier.

Riley soon arrived to see what damage had been done, expecting to find us all blown into the sea. Luckily Arpika and Gertrude came with him to mend the damaged tents. A search party found most of the missing things, including our tent, in the gorge below the glacier.

By nightfall we had got two loads up to the foot of Bugbear Bank. The going was so slippery that we had to wear crampons, and four men were needed to each sledge on the first bit. The dogs have to wear dog-boots as the ice is very prickly. There is no snow on the ice here, but at any rate the crevasses are not hidden. Bringing the empty sledges back to camp we let the dogs run loose and tobogganed the sledge downhill. We are all completely exhausted after last night.

October 29th. Gale in the night, but the tents held firm and most of us slept through it. It is very difficult to organize six sledges and nine men. Bugbear will prove a bottle-neck and we must get the sledges moving on it at once. The loads will work out at over 100 lb. per dog, excluding the weight of the sledges: this is excessive for untried dogs. The supplies for the journey are as follows:

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	Lb.
Pemmican for 40 dogs for 28 days at 1 lb. per day	1,120
Dog-fat for 40 dogs for 28 days at $\frac{1}{4}$ lb. per day .	280
14 ration boxes for Station	700
9 ration boxes for sledging party of 6, including journey home	450
Paraffin for Station	150
Paraffin for sledging party of 6	100
Tents, sleeping-bags, spare clothes, skis, snow- shoes, cooking utensils, personal kit at average of 100 lb. per man	600
Survey box, ski-spares box, rope box	100
Wireless load	600
	<hr/>
	4,100
	<hr/>

Up at 4.30. High starlit morning. Sirius shining very bright just over the snow-covered Base mountains and Orion's belt well up in the sky. Heard the harsh regular bark of an Arctic fox down by the shore. As soon as it was light enough, four men took a load up to start work on Bugbear. The rest of us packed up the camp except for one tent and the owners' belongings. Two of Courtauld's dogs escaped and eluded us all day. Wager's team consists of two small families who pull in opposite directions or fight like fiends. Three more loads to Bugbear-foot.

On Bugbear we fixed up block and tackle for hauling up the sledges, but it is very slow work. The slope is a sheet of smooth ice so steep that the dogs can get no grip, and the work of getting the loads up is more exhausting than anything I've ever done in my life. By 4 p.m. it was too dark to see and we returned. Most of us are camping at the foot of Bugbear, but Stephenson and Wager are still below as there are a few more loads still to come, while the supporting party's tent is safe in the small moraine. The wind started as we turned in.

October 30th. Blizzard in the night. We put our boots and

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windproofs on, but the tent kindly remained in an upright position with 800 lb. weight on the flap, although we expected it to go at any moment. We decided to stay in our sleeping-bags this time if it went. The wind died down at daybreak. Spent the day on Bugbear. Towards evening the wind started again and blew us all over the place. There was a clear sky and a lurid green light over the sea. The fine snow gets in everywhere: fills our pockets, blows down our necks and freezes on to our faces in an icy mass. The snow thaws on one's forehead, runs down and turns to ice on one's eyebrows. My eyes froze up solid. It is most painful pulling the ice off, so I compromised and kept only one eye open. Wager found his beard most inconvenient as a mass of ice several pounds in weight froze it solidly on to his helmet. He had to get Stephenson to cut his beard off while they were putting the tent up.

We pushed a few loads right on to the long moraine to-day, and just as it got dark Courtauld and I left the last load there. The wind had suddenly increased and if we had not been returning to camp I don't think the dogs would have faced it. The homeward track was obliterated. I was running ahead to lead the dogs, while Courtauld was riding the empty sledge, bumping along over the steep hummocks. I turned round to see that Courtauld had been thrown off the sledge and that the dogs were careering off down the slope to the right, making straight for some huge open crevasses. I did the fastest quarter-mile I have ever done and just caught the sledge as the dogs reached the crevasses.

October 31st. It's a curious feeling having breakfast by candlelight at 4 a.m., but we must use every bit of daylight: there'll be little enough soon. A glorious day. Moved two tents up to the shelter of the long moraine. Lemon soldered up some paraffin-tins which got punctured on the rough going, as we have abandoned the extra weight of their packing-cases on this journey. There is only one load to bring up Bugbear now. Stephenson and Wager are still at the glacier-foot, so they can bring it up to-morrow. The going here is terribly hummocky,

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and it is amazing to see the heavy sledges adapt themselves to the shape of the ground.

Lemon's dogs were left at the top of Bugbear for a few minutes to-day and broke into a bag of pemmican on the sledge, eating 25 lb. Started giving the dogs fat to-night.

November 1st. Woke up with a start in the night to hear a sledge moving and dogs barking outside: I yelled and all was silent.

Overcast and warm to-day. Found Milly, the bitch of Courtauld's team, had produced puppies in the night. In spite of her large size she had wriggled out of her tight harness and the puppies were lying in the snow. I built a snow-house round her so that the supporting party can take her home when they return to the Base.

From the long moraine four of us took on two-third loads to the first crevasses, while the last load was being taken up from the glacier-foot. It is very hilly here and the surface frightfully uneven, we have continually to rush from side to side of the sledge to stop it overturning, as well as shoving most of the time. The dogs pull well till there is any obstruction and then they sit down. You have to shout "*Damma! Damma!! DAMMA!!!*" to them all the time.

Returning for the second load was most exciting. It was fairly steeply downhill all the way. We put rope drags round the runners and kept our heavy climbing-boots on, so that sitting astride the sledge we could dig our heels into the snow to brake. The dogs went at a colossal speed—about 15 m.p.h.—and it was absolutely all we could do to hang on to the sledge. At the long moraine we met the others coming up, and joining them all went on with two-third loads.

Courtauld's wild dog escaped again to-day after biting him, and continually watched us from behind an ice hummock. Lemon's dogs suddenly caught sight of it when traversing a steep slope and, filled with curiosity, bolted off down the hill at full speed with the heavy wireless sledge leaping along behind. They were

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making in the direction of the Base now and nothing could have stopped them, but luckily the sledge crashed over and came to a standstill. Fortunately no damage was done. We had to relay two sledges at a time up the last hill and are now all at the edge of the first crevasses.

Stephenson and Wager have roped up and gone on to flag a way through. The snow is better here, but very changeable: hard and breakable crust alternately.

November 2nd. I went out at midnight and found Courtauld's wild dog had rejoined his team. Holding a torch at arm's-length in one hand, I caught him with the other and chained him to the sledge. One dog has already been so badly mauled by another team that it will have to go back to the Base with the supporting party; and we can't afford to lose another.

At last we can wear our deer-skin moccasins and cloth leggings instead of climbing-boots; we have had to waste a lot of time each morning thawing them out and they are extremely uncomfortable. We are using two sledges of a new type on this journey. They have metal runners an inch wide, for travel on the sea-ice, over which wide wooden runners for Ice Cap work can be clipped. We have used the metal runners so far with great success, but now the surface is softer we must attach the others.

We moved two sledges at a time through the crevasses, having four men on each sledge, while Wager went ahead on a long rope attached to the leading sledge. He shouted as he crossed each crevasse. The snow bridges were very weak and we often put a foot through. There are hard ice-ridges protruding which tend to overturn the sledges. Once the second sledge got left behind a little and the dogs incontinently cut a corner off the winding track to catch up. The whole sledge overturned and lay on a bridge over a wide crevasse. We secured it with ropes and then hauled it out. Somebody had put a leg through a few yards further along this crevasse, but for some reason the bridge held fast there.

The supporting party had to go back to the Base to-day.

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They have stayed with us far longer than we expected and have helped us enormously. To-day we often had to stop for sudden blizzards which whirled the snow around us, and towards evening the gale became continuous.

With all six sledges moving together now for the first time I wanted to get past the windswept crevasses and into the valley beyond: but as night fell the blizzard became terrific and we had to stop at once. It was all six men could do to get a tent up, and we had to be satisfied with only two, keeping the third as a refuge in case these are blown away. By the time the tents were up our faces were masks of ice frozen to our helmets. We were all covered with snow and it is a very wet and crowded camp. We leave the dogs unfed and with tangled traces: they immediately curl up and cover their noses and paws with their tails.

November 3rd. The wind blew all night and all to-day with hardly a lull. The snow piled up against the tent, making it still smaller inside. We have been on half-rations since the second day, as it looks as if it will be some time before we reach the Station. If things go on like this we shall have to reorganize the party soon.

November 4th. The Survey watch is kept at Greenwich Time instead of Local Time, and to-day we inadvertently got up at 4.30 Greenwich Time—three hours too soon. We didn't discover this till after breakfast as the bright moonlight looked like dawn. As the moon set we realized our mistake and waited in the tents till 6.30. Wager was first outside and I asked him how light it was. I remember the laconic answer: "It's light enough to dig!"

All the sledges and the boxes round the tents had to be dug out, and many of the dogs were more or less buried too. The traces were in a most fearful tangle and a few of the dogs had bitten free. My traces were in a solid frozen tangle as big as a football, which took a long time to unravel. Lemon's traces were hidden under a drift several feet deep. On top of this we found Hampton's sledge had broken, and we had to turn the runners back to front and relash it with more supports. We were not away till 11.15, and then went very slowly with the big loads.

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Some of the teams can't start their sledges alone, and several of us have to help. We had to haul all day and by evening were bad-tempered and absolutely done.

We reached the second crevasses in the evening and Wager and I roped and went ahead. Keeping parallel to them and between the worst ones, we can avoid them all, as they are very regular. One sledge went half-through, but we got it out and camped just beyond, as the wind started to blow to such an extent that the sledges behind were soon lost to view. My dogs ate the lash off my whip while I was putting up the tent.

November 5th. Wind blew all night and is still going strong. Lay up all day. The dogs are in a bad way. We hear them whimpering and many are at large. Things are incredibly uncomfortable. Our fur bags are soaked inside, possibly because we rarely have the time or courage to undress. The inside of the tent is covered with hoar-frost which descends in showers at each blast of the wind. When we wake up, the clothes round our faces are a mass of ice from our breath. We take it in turn for two men to go out and feed the dogs. You literally can't see the next tent.

We must look at our position now. We have done 10 miles in eleven days. Clearly we can only expect to travel one day in two, and thus 7 miles per day will be our utmost limit. The weather will probably get worse as winter advances. We must expect thirty or forty more degrees of frost and the days are fast shortening: very soon we shall only have a few hours of daylight. The dogs are already showing signs of weakening.

Obviously some of the party must return: but who and how many? If we have to rely on the aeroplane, then the wireless, and Lemon to work it, must go on. We have only had one flying day in ten so far, but this may change when the sea is completely frozen over. We started a new ration box to-day and were bitterly disappointed to find that the chocolate, the only thing that makes life worth living on a journey like this, had been taken out.

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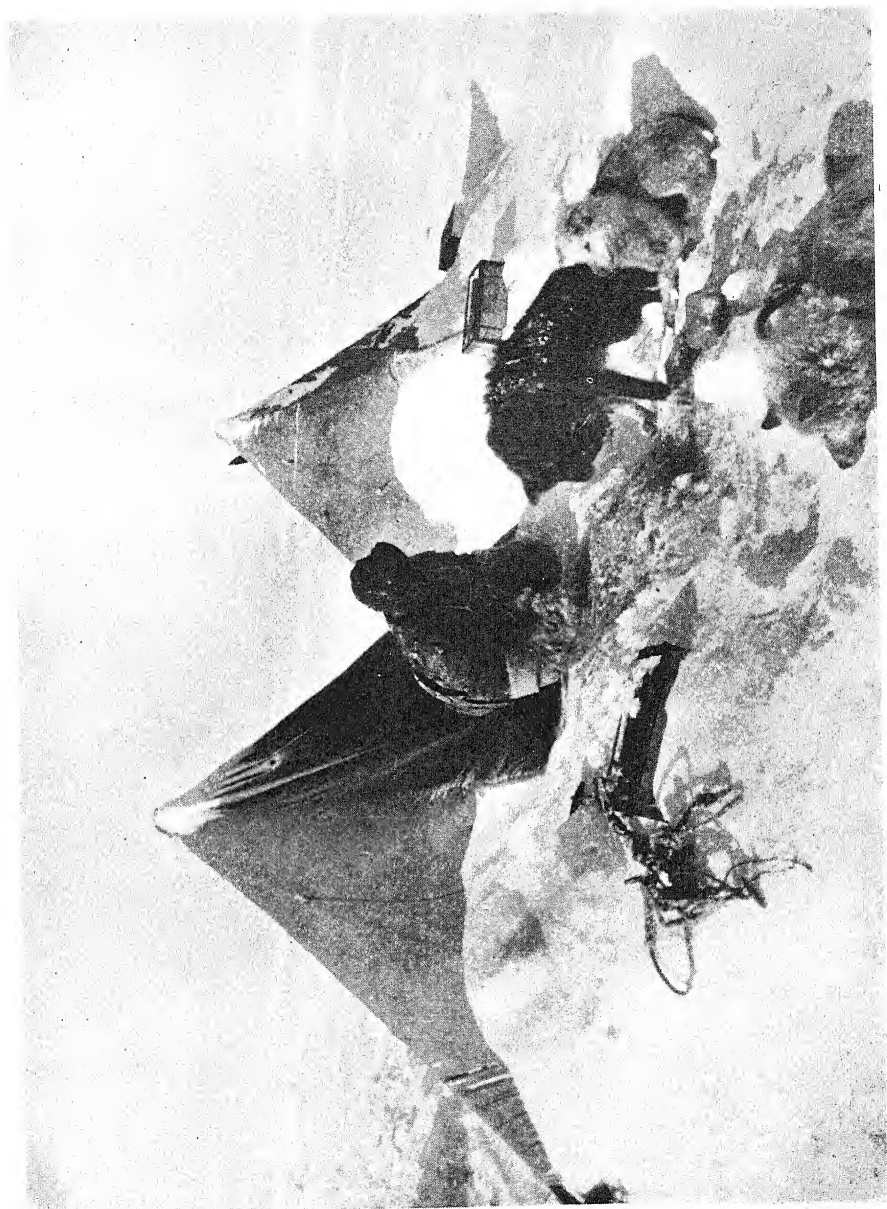
November 6th. Gale continued with increasing violence all night and day. Our tents simply can't last much longer. The dogs have all bitten free and are huddled against the tent for protection. I fed the dogs to-day. It is impossible to breathe with this wind. At first I was simply bowled over and had to return to the tent for breath. The dogs have been at the pemmican again. This is very serious. My feet have been numb since yesterday; I can't feel anything when walking on them.

In the evening the gale became ghastly and we put our clothes on inside our bags in readiness. We could not hear each other speak and hoar-frost poured over us like snow. The wind must be well over 100 m.p.h. It must have felt rather like this being under shell-fire during the war. If the tent goes we are corpses.

November 7th. Amazed still to be here. Lemon was jammed in between a ration box and a hard drift which has pushed in the side of the tent. I had to go outside and dig it out before he could move. Feet still numb: I wonder if they'll drop off. I wish I'd had more experience of frostbite so as to know what to expect.

Wind lessened in the afternoon. Went outside and found my dog Hynx frozen into the ice by his tail. I worked at it till my fingers got frost-bitten and then, thinking that it was only the tuft at the end of his tail that was frozen in, I cut it off. He showed no sign of pain. Read *Tess of the D'Urbervilles*: a suitable book in this place; elemental strife in both.

November 8th. Away at last. Ten miles in thirteen days so far. Wind dropped at 7 a.m. Hours spent digging out. Everything is buried in drifts so hard that we have to cut them away with ice-axes. We shall run out of rope soon. Courtauld's dogs have eaten all their traces and several harnesses and most of his lash-line. In most cases the heat of the dogs' bodies lying on the drifts has embedded the traces into solid ice. The rope then gets cut to bits as we hack them out. I found a neat red cross-section of Hynx's tail in the snow to-day, showing that I must



AN ICE CAP CAMP AFTER A THREE DAYS' GALE

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have cut the bone; but he seems quite happy. Most of the dogs are limping and look half-dead.

Not away till 11.20. Thirty-four degrees of frost. But there is no wind and we sweat terribly. Left a letter for Watkins at the Pillar Box (a special flag to which we attached a tin). He may pass this way some time soon on his return from the Southern Journey. Passed the Big Flag after a fearful pull up the long hill. Continuous delays from the back sledges. Lemon's dogs won't pull and Stephenson and Hampton have frequently to help him to start. Poor light now: visibility bad. It is absolutely essential for us to keep on the line of flags. Once we miss them we lose hope of finding the Station, as position-finding may be impossible in the cold we shall get later, and when the sun will only just clear the horizon. I am wearing three pairs of socks and three pairs of blanket shoes and fur boots, pants and vest, sweater, blanket trousers and coat, windproof trousers and coat, canvas leggings to keep the snow out, two pairs of wool mits and wolf-skin mits, wool helmet and windproof hood. Buried the pemmican to-night by the tent-flap. All our guy ropes broke in the last gale: repair them before turning in. Did 5 miles to-day. Terribly hard work.

November 9th. Gale all night and all to-day. My sleeping-bag has half an inch of water inside.

November 10th. Fifteen miles, fifteen days: what a hope! Forty-eight degrees of frost in the night. Visibility bad: diffused light and slight snow. Suddenly saw a small moving object in the distance away to the left. A dog? A bear? It proved to be Watkins and Scott returning from their journey. What an amazing coincidence that we should be just here when they rejoin the flagged route. Went to meet them. They looked absurd, both sitting on top of a vast sledge with a whole galaxy of dogs in a fan before them. They were amazed to find we were still outward bound and Watkins held out little hope of our being able to do more than remove the two from the Ice Cap Station and bolt back. He said he couldn't decide anything for me and that I must do just what I thought best, though he admitted it would

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be necessary to dump the wireless. This is a great weight off my mind, as we can't get on with these loads.

Pushed on past a few more flags. The hard crust which we have had for the last few days is failing us now and continually lets us down: this is the last straw. Lemon and I spent most of the night discussing plans and working out loads. It is good to share a tent with a man of his age and organizing experience. Decided that Lemon, Stephenson and Hampton return to-morrow. Courtauld and Wager will do the next spell at the Ice Cap Station. We will dump all the wireless gear and anything else we can at this flag.

The three of us will take on the following: 6 ration boxes and 200 lb. paraffin for the Station, 4 ration boxes and 50 lb. paraffin for ourselves, 580 lb. of dog pemmican and 225 lb. of dog-fat (we can't spare the other party any dog food at all), 2 tents, 2 ground-sheets, 3 fur sleeping-bags and reindeer skins, 2 primus stoves, a bottle of methylated spirit, 3 pairs snow-shoes, 1 pair skis with towing attachment, all the spare rope and cord available, ice-axe, spade, 4 flags to replace the vanished ones, 3 whips with spare lashes, medical set, snow goggles, theodolite with legs, barometer, thermometer, 2 compasses, wireless time-signal set with batteries and aerial, as well as our personal kit which includes spare clothes and a few books.

November 11th. Dumped wireless and seven ration boxes at Flag 56. Spoiling the Egyptians wasn't in it. We took the three best teams of seven dogs each that we could make up. We also took the best of everything they had, sledges, clothes, books, whips. Got away by 11.30. We have arranged to have a dinner in London next Armistice Day. I really felt quite sad to see them turn their sledges in the other direction and leave us. We have arranged a code for the aeroplane. An "X" on the snow if landing impossible and an "O" if possible. If there is no sign of us by December 10th they will send a search party, though they hope to fly up and drop dog food as soon as the weather is suitable. Courtauld came into our tent this morning and suggested that

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he should stay alone at the Ice Cap Station. He stresses what has been worrying me, namely that we shall take so long to reach the Station that we shan't have enough supplies to leave for two people. Furthermore, the bad weather, having started so early, may continue till February and even over March, so that no sledge party could come up and the aeroplane could not land.

Courtauld says he is used to being alone and is very keen to try the experiment in such conditions. With so many books, a good supply of tobacco and ample food for one man, he says he will be perfectly happy and is most anxious to do this. In England few people objected strongly when Watkins said one of us might have to stay alone at the Ice Cap Station in case of necessity, and this looks like the case in point. Anyhow, we can't decide anything yet: we've got to find the Station first.

The surface has deteriorated. The winds up here have lashed it into a maze of frozen ripples and waves. These are marble-hard and frequently overturn the sledges, which are now breaking down under the strain. Several times we had to unlash the sledges and remove the loads before righting them again, otherwise the strain would wrench the runners off. It is most exhausting dodging from side to side of the sledge to hold it up. Wager's team of small dogs are going best: I wonder if it is because they need less food.

We now go on for a mile (by sledge wheel) after we miss a flag in the gathering darkness. It is an awful strain gazing into the void looking for flags. You have simply no idea what focus to use as there is nothing to focus on. We thought we saw a big dark-coloured object in the distance to-day but found it was a small piece of black paper only 10 yards away.

Tried all three in one tent to-night, but under these conditions it is impracticable. There is so much ice frozen on to the inside of the tent below the primus-level that the tent is minute. With three of us we are always touching the tent wall, which let loose showers of rime on to us. My watch froze up to-day and won't start again.

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November 12th. Saw we had camped a few hundred yards to the right of the flags. Steering by compass is unsatisfactory as the dogs soon lose direction and you have to stop to take bearings: also the needle is very sluggish. I usually steer by keeping the sledge runners at 35° to the angle of the drifts, which run about N.W. and S.E. It is lucky we are not running parallel to the drifts or they would tip us up all the time.

Warm enough to discard windproofs to-day. Tried wearing skis, but one can't move about fast enough to control a sledge on this sort of going. All our sledges over several times to-day. Lost flags by 4 p.m. and did a mile afterwards. Camping in two tents this time: Wager volunteered for the single tent. He'll have plenty of room and will be able to dry his stuff properly. Our clothes are all stiff when we go out in the morning, but they soon thaw with our body-heat. Untangling traces last thing at night is a ghastly job: you must take gloves off. The ends of our fingers are all hard and insensitive. The toes I got frost-bitten on the last trip are very painful now and keep me awake. The nails have dropped off and the big toes are raw and stick to my socks. I keep on stubbing them on the ridges, causing myself acute agony. We are all too tired to talk.

Several flags so far have been buried and the bunting is usually torn to shreds. Very often too they are obscured by drifts and we don't see them till we are 50 yards away. So accurate steering is essential.

Wager came over and had supper with us. We didn't take enough primus prickers from the other people and I had to use the second hand off my watch to-day after trying all sorts of other implements. But Wager is a wizard with the primus and has made it work. The fumes in the tent are very bad. Our pipes would not light to-day.

November 13th. Blizzard again. Wager came in and we read *Palgrave's Golden Treasury* aloud. We cooked a small bit of seal-meat we had brought with us as a luxury. It was the most wonderful delicacy I have ever eaten. Most people miss so much

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in life. You can't realize how marvellous it is to sleep between sheets till you have spent weeks without taking your clothes off in a frozen fur bag on hard snow. Nor can you appreciate the delectable pleasure of a good meal till you have lived on sledging rations for weeks on end.

November 14th. Lay up again. Read *Week-end Book* and Shakespeare's *Troilus and Cressida*. Temperature, 24° of frost in the tent and 50° outside. Made toffee out of margarine, sugar and oatmeal. The dogs have only their heads out of the snow, but seem happy.

November 15th. Still blowing, but it calmed down at breakfast-time. Sixty-five degrees of frost in the night. The snow is still whistling along, but only a foot above the surface. Our clothes all went hard as soon as we got outside. Most fearful drifts everywhere; one about 5 feet high and 20 yards long by Wager's tent. Only the handlebars of my sledge showed.

Hours of digging. The white dome of Mount Forel appeared to-day. Not away till 12. So many black shadows cast by the drifts that it's hard to see the flags. Wind terribly cold. Our noses got frost-bitten often to-day, but as long as your hands don't go too you can thaw your nose out.

Dogs infuriating to-day, and I'm hoarse from shouting. They will try to follow the hard going on the drifts and avoid the soft snow in the hollows. Whenever they do this one runner stays on the drift while the other slips down a foot or two: over goes the sledge, and now they are breaking up. After 2 miles one runner of my sledge snapped at the front and the other runner tore away from four of the supports. Repaired it with thongs before turning in.

November 16th. Lay up all day. A quite phenomenal amount of ice formed round my face in the night. Wind terrific. As we shall have either to abandon the Station or leave only one man there, we are leaving three ration boxes and a tin of fat when we move, as the sledges cannot carry these loads on this going.

Read *King John* and *Alice in Wonderland* aloud. Made oat

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cakes: rather solid. I let all the dogs loose when I went out to feed them. They may do better if they can run about and sleep in the shelter of the tents. Also we can't afford to lose any more trace-line. Another advantage is that we can untangle and sort out the traces in the warmth of the tent. Most of the dogs have raw wounds on the backs of their legs about 3 inches above their paws. This is from breaking through the wind-crust.

November 17th. Blizzard continues. Enjoyed to-day vastly. Though it's irksome not to be able to get on: yet we can't move, and there it is. There is a consoling inevitability about it. The contrast of the companionship and comparative comfort of a warm tent to straining along in the cold cursing your dogs is immense. Read *Master of Ballantrae* to-day and started *Treasure Island* again.

November 18th. Lay up all day again. Two miles in five days. It looks as if we shall have to go on till the dog food is finished, then kill off the weaker dogs as food for the others, then—if we find the Station—collect Bingham and D'Aeth and manhaul back.

The snow is whistling along to-day with a continuous droning sound. Much troubled by sores, which have gone septic, caused by my trousers rubbing.

November 19th. Did 5 miles. Very cold. Sledges going over all day. Each time one goes over, we stop. All get hold of it. One, two, three, heave! and up she comes—sometimes. Often we have to unlash it first. If one of the last sledges goes over I may go on for a few hundred yards before I see. It is hard to hear with a helmet and hood on; besides, the sledges make a continuous groaning jolting noise. The uprights on the other runner of my sledge pulled out to-night and we had to stop at 3. Our fingers got frost-bitten mending it as we often had to take our gloves off.

November 20th. 7.3 miles. Pulled the front of my sledge into the tent this morning and finished the lashing. The dogs chewed most of the Lapp thong off it last night, which I replaced.

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They have also eaten all the gut off the snow-shoes, which are now useless.

Worst day I've ever had. With the sores in my fork and frost-bitten toes each step is agony. Several times I just couldn't go on and had to sit down for a few minutes.

We went on a long way after sunset to-day. I found I could keep a good enough line by steering on the stars. We used the lowest star of the "Handle" of the Great Bear. Luckily we passed within 10 yards of the flags and so could see them. We have done 40 miles in twenty-five days and have 82 miles more to do, as well as the journey back of 120 miles. Yet we have only fifteen days' dog food left. I know there is a little dog food at the Station, but not very much.

November 21st. Very cold night, couldn't sleep. Pains in feet and hands. Spent two hours before sunrise mending my sledge, which collapsed again yesterday. Courtauld's dogs ran off ahead just as we were ready to tie them on and start. They only returned when the other sledges started. Sledges going over all day.

It's just amazing what one can do to these dogs under such conditions. One behaves like an animal and hits them anywhere with any weapon. However they seem quite impervious to punishment either from us or from each other. They can be unbelievably annoying, refusing to obey either word of command or whip. Yet it is marvellous how they go on pulling all day.

Forel appeared again to-day miraged up to fantastic size and continually moving like a spectre. Halo round sun with small mock suns at each side. Only a few hours' daylight now, but luckily dawn and twilight are prolonged. Had to kill one of my dogs which was too weak to pull. We can't afford food for it. Killed it instantaneously with the blunt side of an axe. There is a moon now and we travelled by it till the flags were lost. My sleeping-bag was frozen solid into a rolled-up position; all we could do to straighten it out to-night.

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November 22nd. Driving snow prevented travel at first. Then we found all the sledges so badly broken that a whole day had to be spent repairing them. We cut up the handlebars to make supports, and put wedges in to keep the Lap thongs taut.

Read *Kidnapped* in the evening. There is literally 2 inches of solid ice right round the inside of the tent below primus-level. The atmosphere in the tent was so bad to-day that the candle would only burn a few inches above the floor. Pipes wouldn't stay alight and matches could be rubbed up and down the box without any effect. Yet the primus still burns: perhaps it's the cause of the trouble. We remembered Stefansson's account of carbon-monoxide poisoning and opened the tent-door.

November 23rd. Fifty-seven degrees of frost all day. We are all feeling the height and cold. It is a tremendous effort to dress and lash up: we just lie back and pant after any exertion. Sun rose at 8.30. A mile an hour is our maximum speed. Did 6 miles. Saw tracks of an earlier party to-day in spite of snow-drifts over most of route. It's amazing how these old tracks persist. Flags are very battered here and hard to pick out.

November 24th. Sixty-eight degrees of frost in night. Ears, nose and fingers frost-bitten to-day. Sleds go over all day with monotonous regularity. Tiss (a bitch in Courtauld's team) had a puppy when we stopped for lunch. Dreng (the father) licked the snow off it. We relentlessly fed it to another team, and the same had to be done with three other puppies which appeared in turn each time we stopped. Yet the bitch pulled well between each. Poor brute, but what else could we do? Snow drifting, can't see flags. Saw a meteor to-night travelling low across the sky parallel to the ground.

November 25th. Sleeping-bags absolutely sodden. Gale started in night and blew furiously all to-day. Tent has shrunk very much. Toes and finger-tips rotting slowly. Spent evening planning a yachting tour in Bartholomew's Touring Atlas. Went out to feed dogs and got forehead and cheeks frost-bitten—a new sensation.

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November 26th. Lay up. Read *Cymbeline*, then started *Forsyte Saga*. Sledges falling to bits: what can we do? Dogs prowling round tent all evening.

November 27th. Tremendous digging to be done. The heat of the dogs' bodies freezes the tent-flaps into the snow. Going better after new snow. Wager's sledge breaks down. North-East wind to-day: most unusual. Four and a half miles covered. Amazingly hot to-day, only 28° of frost. Warmth thaws everything at night and we are soaked through. Dogs tore lumps out of Wager's tent last night and broke into a kit-bag.

November 28th. It isn't light till 9 now. Wind increased till blizzard blowing by afternoon. Flags very hard to find. We go for $\frac{1}{2}$ mile by sledge-wheel, then all walk out in different directions to search for a flag. Hynx too weak to pull: I'm afraid he'll die soon. Surface altering. Soft snow takes the place of hard irregular ridges. Lost flags at night.

November 29th. Dogs tore open a kit-bag last night and went off with a pair of binoculars, eating the leather case. Dull foggy morning. Go out on skis to search for flags. We can't go on till we find them. Found them $\frac{1}{4}$ mile to left. Away 11.15. Almost 1 foot of soft snow in places, sledges continually stick: dogs can't cope with it. Wind still N.E. Dogs keep on stopping. Wind increased. Suddenly in evening going hardened and improved. Half-moon now and in spite of drifting snow we went on long after dark till we lost the flags. The dogs are fearfully hungry, but we can only spare them half-rations.

November 30th. Search for flags in morning. Found one at last. Bad drifts again overturn sledges, but going is much better. Went on for two hours by moonlight, luckily finding the flags. How incredible, we've done 12 $\frac{1}{2}$ miles: a record for the trip. Hynx, who has daily been getting weaker, was too ill to pull to-day and collapsed every now and then. I let him run loose, but he got left behind and hasn't been seen since. Very cold putting up the tent by moonlight. Pray God this going may continue. We had full rations to-day to celebrate the record.

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December 1st. Everything went wrong to-day. Primus wouldn't work, so had a cold breakfast. Wind blowing; but we must travel. Did $10\frac{1}{2}$ miles; moon quite bright now: it has saved the situation. Only one primus worked in the evening, so we put it in a box and dragged it from tent to tent.

December 2nd. Good going and moonlight continues. Twelve and a half miles to-day. Expected to reach Station to-night. Reached flag $\frac{1}{2}$ mile short of Station and went on for $\frac{1}{2}$ mile, but though we searched we saw no sign. Slept without drying clothes or cooking a meal, expecting to see Station a few hundred yards away at dawn. Terribly disappointed not to find it to-night.

December 3rd. Found no sign of Station: on the contrary, flags seemed to go on. Examined traverse book and found we had made a foolish error in mistaking the Station numbers for the actual numbers on the flags. We still have 12 miles to do.

This is a most frightful disappointment as we had expected to find the Station just near and hadn't dried our clothes or anything. However, we determined to reach it to-night. I steered by the stars for hours: first on Arcturus, then when that swung round, on Vega. In the end, in spite of drifting wind and 74° of frost, we found flag after flag till we were only a mile away. It seemed incredible that we were really getting near at last. We missed the last few flags but stopped when our sledge-wheel told us that we had gone far enough. We walked out in different directions and I found the Station a hundred yards to the left. It was 8 p.m., four hours after sunset. The others would hardly believe me at first. Then we walked into the yard and down the tunnel shouting "*Evening Standard! Evening Standard!*" When we stood at the end of the tunnel and showed our faces they were so covered with ice that Bingham and D'Aeth could not recognize us. There were 80° of frost with a wind blowing too. God knows they were glad to see us! We were five weeks overdue, but they still had plenty of food. We had only one day's dog food left after feeding the dogs. We unharnessed them for the first time since

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leaving the Base, and they all curled up in the shelter of the snow wall.

Bingham and D'Aeth said they had heard noises like a minute earthquake—that was the sledges moving. They had looked at each other, at first refusing to believe it could really be the relief party arriving. We had a marvellous brew of pemmican and then slept in the snow-houses.

December 4th. Slept on till 10. Blowing a furious gale. We must start home to-morrow. We had a marvellous, if somewhat premature, Christmas dinner of special delicacies we had brought up from the Base for that purpose. The menu was as follows:

ICE CAP CHRISTMAS DINNER

December 5th 1930

MENU

Game Soup

Sardines in Olive Oil

Parmigan

Plum Pudding

Rum Sauce (very)

Angels on Sledges

Dessert (Dates and Raisins)

Mincemeat, Jam, Hot Grog, Tea (with milk)

NOTE.—NO PEMMICAN

Though I cooked it, the dinner was better than any other dinner has ever been.

December 5th. Gale still going strong. Thank God we got here before it started. Spent to-day discussing what is to be done. The Doctor and D'Aeth are dead against one man staying alone. They say they have experienced it and they know. One day the Doctor was out alone and suddenly the Union Jack on the wall flapped loudly. He bolted back into the tent as fast as he could.

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Another time D'Aeth unexpectedly caught sight of the Stephenson screen and thinking it was a man he too rushed back into the tent. However, Courtauld is determined to stay and eventually we gave in. I must say it would be a thousand pities to abandon the Station now, since it has been established and maintained with so much trouble. Courtauld is very keen to stay, and judging by Watkins' experience amongst the Labrador trappers it is not so bad as people make out.

Dried all our clothes to-day and collected all available dog food. There is a little dog pemmican here, and several tins of man pemmican and margarine. Altogether we can muster food for eight days on half-rations. When the wind died down we went outside and repaired the sledges, then lashed them up ready to start. I killed one of the dogs to-day as food for the others.

December 6th. There is a full moon, which last night was so wonderfully bright that it threw hard black shadows and lit up the Ice Cap for miles. Started off at 5 a.m. by moonlight, with 78° of frost. We left Courtauld with food and fuel to last till the end of April at least. It's a marvellous effort and I hope to God he gets away with it. I went ahead on skis: this seemed to cheer the dogs up and we did 13 miles.

December 7th. There is a period of darkness between sunset and moonrise and we tried putting up the tent then, but this was not a success as we all incontinently fell asleep. Strange halo and cross round the moon. The sun didn't rise till 11 to-day and set again soon after. Did 14 miles.

December 8th. The moon doesn't set now, but goes round the sky in a circle. Found it too tiring going ahead on skis over the hard drifts, so tried our towing apparatus behind the leading sledge. It was not very satisfactory. Fourteen miles again. If this holds we shall get back without losing more dogs.

December 9th. Tried getting up at 2 a.m., but it was not a success, and we had to return to the tents. Two feet of deep powder-snow to-day. Dogs completely exhausted; so are we. We went on till we could hardly stand up. Another 14 miles.

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Some of the dogs are very weak and can't last much longer on such meagre rations.

December 10th. Wager's sledge-runner broke across to-day and we had to cut the sledge in two and divide his team. We saw Forel to-day. D'Aeth and Bingham were very excited to see land again after all these weeks. D'Aeth's hands and toes are quite badly frost-bitten and he can't do any work. We have to send him on ahead each morning.

December 11th. Dogs got at fat tin in the night. Although the days are shortening, yet as we are going south we seem to keep up with them, and to-day the sun appeared for three hours. Did $13\frac{1}{2}$ miles.

December 12th. Cold wind. Sledges overturn a lot to-day, and the going is very variable. We hope to reach the dump at Flag 56 soon. As we left all available food and paraffin with Courtauld we are now very short indeed, but thank God we aren't slaves to the dépôt system. We can get home without it. Lost flags in evening.

December 13th. Wind prevents travelling. Snowing too. We can't spare paraffin to warm the tents and only use it for one hot meal each day. Candles ran out to-day.

December 14th. Visibility bad, and though we search in all directions we can't find the flags. Terribly hot all day. Deep snow which exasperated the dogs. We have no food left now except pemmican, margarine and pea flour, and no paraffin to spare to cook it.

Dogs very troublesome. They tore open several kit-bags and ate seal-skin clothing.

December 14th. Blizzard. Very miserable lying up in tents in darkness with no paraffin to cook food or warm tent. Doctor and I told each other stories all day.

December 16th. Sledges absolutely buried in snow. Terribly heavy going: the dogs simply swim in the snow belly deep. We only did $3\frac{1}{2}$ miles and had to work terribly hard for it, steering an erratic course by compass. We have missed the food dump and

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haven't found the flags yet. We shall also miss the search party, which is bound to follow the flags.

December 17th. Forced to lie up again. Only margarine left for the dogs. We shivered in the dark all day and got fearfully hungry; but we shall reach the Base soon.

December 18th. Calm starlight morning. We all felt faint to-day. Surface not quite so soft. Suddenly saw coastal mountains and felt cheered up enormously. Recognized hills behind Base. At last saw a flag only $\frac{1}{4}$ mile to the left. By the number we are only 2 miles from Big Flag.

Reached Big Flag Depôt at sunset and found huge dump of dog food, but no man food. They had expected us to find the dump at Flag 56. However, it was marvellous to be able to give the dogs a real good meal. There was dog pemmican, dried whale-meat, and a sack of dried ammassets¹ as well as a small bag of chocolate and cigarettes for us. There was also a note from Scott to say that all the crevasses were safe and we could cross them anywhere. We went on down the hill past the second crevasses and camped in the valley. We fried the ammassets for supper, but they were rather potent.

December 19th. Lashed up by starlight and crossed the crevasses without even seeing them. Went on over the steep hills at a great speed and saw the Base at 10 a.m. A wonderful sight! Bugbear was a sheet of ice, and we were just putting rope drags on the runners when one of the Moths flew over us, cut us dead, and went on over the Ice Cap. On its return an hour later it dropped luxuries and dog food over us. Apparently Lindsay had come this way to the Southern Settlement and they were expecting him to return to-day and mistook us for his party.

To-day was the first day the aeroplanes had been able to take off. No sooner had the ice on the fjord got hard for flying than a blizzard started and blew it all out to sea.

On the way down Bugbear my sledge crashed and one runner split right off. A mile further down the glacier Bingham's sledge

¹ Local name for capelin.

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also broke irreparably. It was amazingly lucky that they had held up so far.

Watkins and some Eskimos met us at the glacier-foot and he was more than relieved to see us all safe. Six of us then sat on Watkins' sledge and went at full speed over the new sea-ice. It was a quite ludicrous contrast to our laborious progress on the Ice Cap. We were all fit but desperately tired. Wager said he had been far too weary to be able to read on the whole of the return journey. D'Aeth's frost-bites were very painful, but luckily he lost no bones.

CHAPTER VII

Winter at the Base

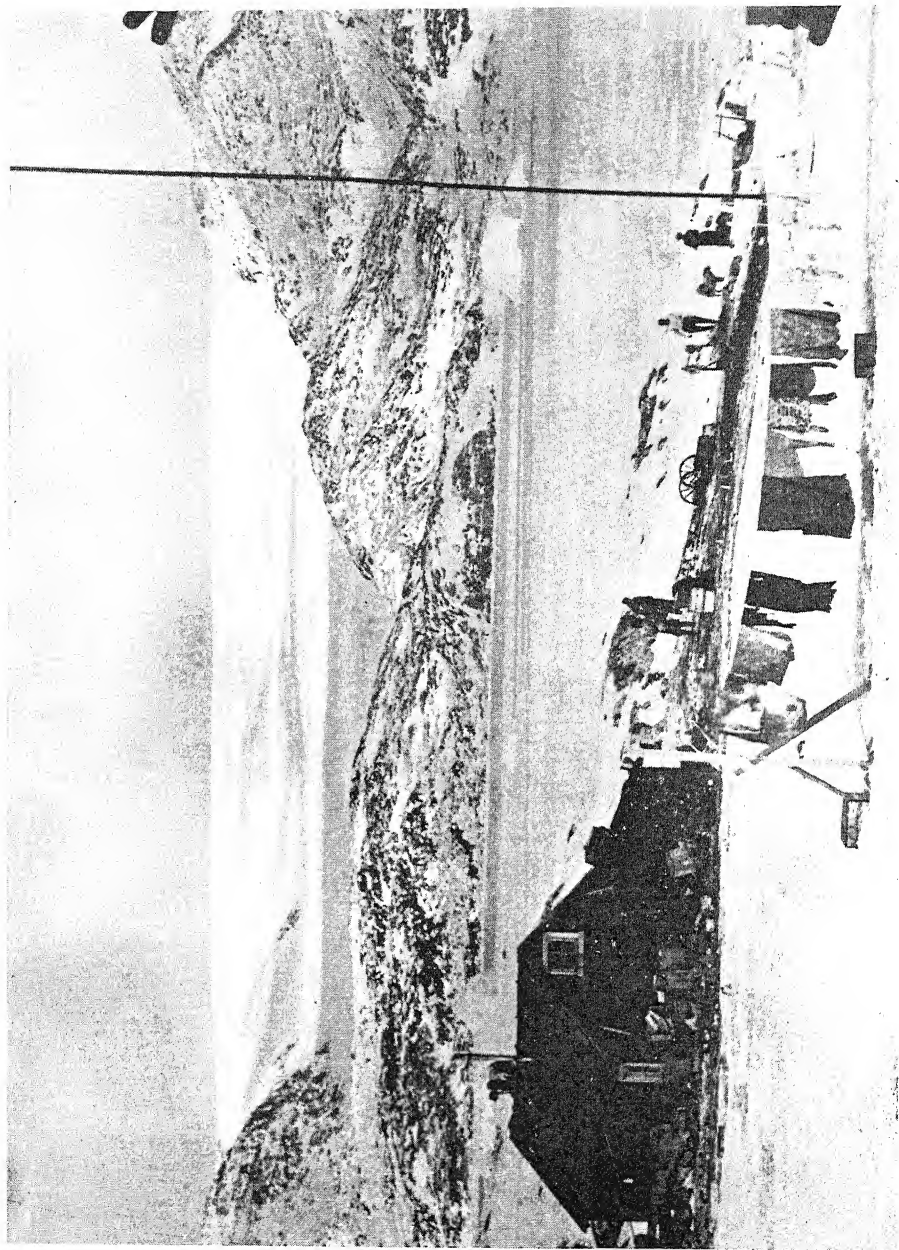
WHEN the October Ice Cap party left the Base it was only with the greatest difficulty that the boat had been forced through the newly formed sea-ice. Apparently in a few days it would be thick enough for sledging, for the aeroplanes to take off, and for the winter hunting to start. But in point of fact the blizzards which occurred regularly throughout the winter broke up the new ice each time, so that it was not till the middle of December that the ice was strong enough for these activities.

In the last stormy days of October the fjord ice was again broken up, so that the supporting party from the Ice Cap journey could return by motor-boat. It had no sooner frozen over again than a gale on November 6th opened up the leads in the ice so that a boat could get across on the next day.

A week later a man arrived by kayak from the settlement 20 miles to the South, to say that his brother had accidentally fallen on a knife which had entered his breast. Could our doctor help? Bingham was up at the Ice Cap Station, but Watkins and Rymill walked the whole way to the Southern Settlement—only to find that the man was already dead.

Just as the fjord was freezing properly, a really bad gale on November 18th opened it all up again, and blew the ice out to sea, so that there was now open water all the way to the glacier.

Although the temperature had been 20° to 25° during the week, it rose to 43° in the night before the blizzard, while the maximum for the day was 61°. This gale was memorable in that the hip-bath which Lindsay had brought was blown across



THE BASE IN WINTER. BUGBEAR BANK IN THE BACKGROUND

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the peninsula behind the Base, and into the sea. An irreparable loss.

A few days before this, Lemon, Stephenson and Hampton, who had turned back from my journey when the party divided on November 11th, reached the Base, but were waiting for the fjord to freeze to collect their kit. After the blizzard they went across in the boat, and found that their kit-bags, tents and stores had been scattered about the glacier in the most awful chaos. Several skis were broken and many valuables lost.

On this day Watkins and Lemon tried to reach our Settlement, but the big ice had poured back into the fjord with an easterly wind, and several times they had to haul the boat over the flatter floes. Eventually they had to leave it and walk home.

The Eskimos cheerfully told them that the blizzards would continue till March, getting worse each time till they would culminate in a really prodigious hurricane at the beginning of March; while this month itself would be fine but cold.

The head of the fjord froze firmly over now, and Watkins started training his team to go in single trace, a much more efficient method than the fan-trace way we had used up till then. The dogs are attached by traces a foot or 2 feet long, in pairs, on each side of a long central trace. The advantages are that the pull of the dogs is more directly exerted on the sledge, and the traces do not get nearly so entangled. In the fan trace, when the order to turn is given, all the dogs have to wheel together for the turn to have any effect; but in the single trace the most intelligent dog, or pair of dogs, is put in front, and as he—or they—obeys, the rest will follow. The greatest advantage is that in deep snow all the team can run in the same track instead of each single dog plunging about on his own.

The chief difficulty of coastal sledging is to stop the dogs. On the Ice Cap, with heavy loads, the dogs are only too willing to stop, but on the sea-ice, when the light sledge runs along with very little effort on their part, the dogs are loath to stop, especially if they see something ahead which intrigues them. On their first

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day with single trace Watkins' dogs got on to the track where someone had dragged home a dead seal, and away they went at a gallop, taking no notice at all of the order to stop. Eventually they ran right up on to the shore, and the sledge came to rest among the rocks.

There was still almost too much water about for winter hunting. When there are only a few leads and pools open, one may reasonably expect the seals to visit them, but while half the fjord is still unfrozen it is a matter of chance. Once or twice seals had been shot, but thin ice prevented their recovery.

Just when it looked as if flying would be possible a really terrific blizzard started on November 28th, and blew for two days with only a short lull. It started at 5 a.m., and increased in violence till 2.30, when the first wireless mast crashed to the ground. As in the first gale, the hut was moving considerably, and it seemed impossible that it would stand much longer. It was decided that when the hut went it would be best to walk to the Settlement. With any luck the hut would break up the first time it bounced. It would be very tiresome if it rolled all the way into the sea without letting its occupants escape. At 7.30 p.m. the second wireless mast crashed; and in a lull of the storm it could be seen that every bit of ice had been blown out of the fjord.

The blizzard had removed most of the snow, piling it up in hard drifts, but towards the end of November it snowed hard for several days, and became much warmer. On November 27th the temperature rose to 30° and it was almost uncomfortably hot working round the Base. Next day it was 35°, and the thaw made things most unpleasant. Even the ice at the very head of the fjord, which had been solid since September, started to melt. On the last day of the month there was 2 feet of wet, soft snow, and even the fresh-water lakes were thawing.

What had happened to the cold weather which we were expecting?

At last, on December 2nd, the temperature fell to 8° F., but

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gales on December 4th and 5th prevented the fjord freezing again. By December 7th it had frozen over and by the 10th it was strong enough for sledging.

On December 11th sledges were again going over the glacier, covering in fifteen minutes a distance that took us thirty-five in the motor-boat. But still the sea refused to freeze just in front of the hangar. Watkins knew that by now the Ice Cap party would be expecting to see the Moth (as indeed we were) and that, as our dog food would soon be finished, we would soon be losing dogs. This was very serious, as all the dogs would be needed for the spring journeys. When on December 15th it actually started to rain, and a temperature of 40° Fahr. was recorded within a week of mid-winter day, it really looked as if winter flying was going to be impossible.

All the time that they were hoping for cold weather at the Base they heard on the wireless that in Scotland there was 8 inches of snow, while in England the roads were ice-bound, and traffic was held up by snow.

At last on December 18th the cold weather returned. Next day a dog-team was harnessed to the Moth, and with the help of six men it was pulled over the neck of land from the hangar to the bay where it was originally rigged. It took off on the first attempt, and soon disappeared over the top of Bugbear Bank.

During the first few months of winter there was plenty to do at the Base. When Riley returned at the end of October, he was alone at the Base—that is to say he was the only white man there, but actually eleven sat down to supper that night. Thus it was only natural that very soon there should be a food shortage at the Base. All through the winter the Eskimos visited us in varying numbers, and if a blizzard started they would just stay till it was over, sleeping in rows down the middle of the floor.

Seal-meat was very scarce. Winter hunting did not start till just before Christmas, and though the natives hunted in kayaks as long as there was open water, they only got just enough seals for their own needs. Luckily, just before the expedition started,

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Watkins had had a wire from Scott—who was already on the West Coast of Greenland buying the dogs—to say that he had not been able to buy as much dog food as he had hoped. So before we left Copenhagen we bought several hundred 7-lb. tins of boiled beef. This proved an absolute godsend, and we lived on the boiled beef half the year at the Base. It was very palatable, much nicer than any tinned meat I have ever tasted, and luckily the Eskimos liked it even more than seal-meat.

Although we were not particularly busy during the winter months, there was usually plenty to do. During November many days were spent sorting out the stores, which had been coated with 6 inches of ice by the spray that was blown up from the sea. The wireless room was turned into a workshop, and sledges were made for winter use. The Nansen "soft runner" sledges, as we called them, were unsuitable for coast-sledging, and were being kept for the Ice Cap as their hickory runners would soon be worn out on the sea-ice. Instead we used light toboggan-like sledges with metal-shod runners an inch or so wide, which would create little friction on the ice. The great advantage of these was that they had handle-bars, and could therefore be guided over rough ground.

Before the October Ice Cap journey had started, the hangar had been finished off, a complete roof being built, supported on poles which were set in concrete. The final structure was 25 feet square and 18 feet high. In place of a door a large tarpaulin was hung over the entrance to prevent any snow drifting in.

Watkins and Scott returned from their Southern journey on November 11th, while Lemon, Stephenson and Hampton got back three days later. From then till my party returned there were at the Base five teams of dogs to be kept, and very little to feed them on. There was still a certain amount of whale-meat, but this was being kept for short journeys. Unfortunately three huge 60-gallon barrels of seal blubber which had been anchored in the fjord to keep them fresh had disappeared in the first gale.

One dog, affectionately known as "The Biter," caused a certain amount of diversion. This dog had many unusual habits, due,

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I think, to some mental aberration. He would rush into another team and bite as many of them as he could, before being set on and half-killed. He was impossible to handle and anybody who approached him was bitten. One day Lemon, who owned the animal, decided to chain him up. As a preliminary (the Doctor being away) he was given half a grain of morphia. Unfortunately morphia seems to have a most invigorating effect on dogs, and The Biter became more than usually active. Next day, as fresh meat was scarce at the Base, he was killed and eaten. Though a trifle tough, he was extraordinarily good, and a great change from seal-meat.

On December 19th the Moth took off, and Watkins and Cozens flew over the Ice Cap to look for my party, which was now considerably overdue. On Bugbear Bank they noticed a sledge party, but presumed it was Lindsay and some natives. Lindsay had gone over to the Southern Settlement a few days previously, and as the fjord was not then bearing, this was the route used by the natives. Watkins then flew in about 30 miles towards the Ice Cap Station, and was surprised to see no sign of the sledge party. However, on his return he looked more carefully at the party which was still negotiating Bugbear Bank, and saw with relief that it was in fact my party. As there were four of us he presumed that Courtauld had been left at the Station alone. Dog food and a few luxuries were dropped to us, though at this stage they were not of much use.

The same day the other Moth, with Hampton and Rymill on board, went over to the Southern Settlement to see why Lindsay had not returned. They gathered from a message written in the snow that having no snow-shoes or skis he was unable to return owing to the heavy snowfall.

That night we had a grand dance at the Base with everyone present except Courtauld and Lindsay.

The office of catering for so many was a whole-time job, and was taken on by each man for a week at a time. The Eskimo staff were excellent, but needed continuous supervision; after each

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meal they had to be told to wash up, and they seemed quite incapable of doing things on their own initiative.

The cook—we started to call him “mess president,” but found that too much of a strain—used to get up at 7 a.m., and call the staff who slept in the loft. They would light the fire (if they had remembered to dry the wood overnight) and start the primus stoves. The stove in the living-room was kept going all night, so it was always quite warm in the morning. Some used to spend a lot of time washing, but others of us seemed to get on very well without.

When there were so many at the Base it was impossible to do all the cooking on the kitchen range, and as many as four primuses might be in use at once. When breakfast was almost ready, the table would be laid, and the others woken up. Of course that had little effect on some people, but when the porridge came in they would get up quick enough. Breakfast consisted of porridge with milk (tinned milk, of course) and sugar, in almost any quantity, tea, then bread and margarine with jam, treacle or potted meat. There was continual controversy as to whether it was better to ration the jam and similar luxuries, but most of us preferred to have plenty till they were finished, and then do without. If it was worked out by slide rule that each man had $\cdot 65$ oz. of jam per day, it seemed to take its flavour away. The lack of rationing was bad luck on people with small appetites, and the only remedy seemed that each man should have his own tin of jam or potted meat. But that would mean more work, and would encourage hoarding: it is always infuriating to see a man still nibbling his luxuries when one's own have been finished several days ago!

Breakfast would be over by nine so that we could make the most of the hours of daylight, which only lasted from ten till two. These would be spent hunting or doing the dull but necessary jobs round the Base. Watkins rarely deputed people to do those jobs, yet they always seemed to get done. Stephenson and Bingham both had orderly minds and they spent days and days sledging stores up from the conglomerated frozen mass on the foreshore

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to be neatly stacked under a tarpaulin behind the hut. Each case—I think there were several hundreds of them—was coated in six or seven inches of ice which had to be moved with an ice-axe. They then made careful charts showing where each commodity or article of equipment could be found.

It became apparent that there was very little room in the Base hut. It was unfortunate that the workshop and wireless room were combined. While Lemon was trying to receive Morse, Stephenson would be repairing a sledge, Wager grinding down rocks to make rock sections for microscopic work, I might be skinning a bird, Cozens passing in and out of his dark room, natives going up and down the steps to the attic, and, in addition to that, people continually crossing the wireless room on their way between the front door and the living-room. Whenever the charging motor was running the outer door was kept open. On one occasion the inner door, for some reason, would not close, and dogs would insist on coming in while Lemon was trying to receive some particularly important message. I shall never forget him sitting there in his shirt sleeves with head-phones on, brandishing an air pistol ready for the next intruder. There was little room for our personal possessions, and the leader of the expedition, who could accommodate himself to anything in the world for any length of time, used to sleep each night on a mattress consisting of several rifles, all his clothes and boots, complete seal-hunter's equipment, and all the expedition's accounts.

It was too dark to stay outside much later than 2.30 or 3 p.m., and we would then have lunch. This was usually a simple affair consisting of boiled beef, followed by bread and treacle.

In the evening there were usually plenty of odd indoor jobs, such as sledge-making, splicing harness or traces, or trying to extract local knowledge from the natives, and there were always plenty of books to read. The wireless was usually working, it was rather amusing to hear Big Ben strike midnight (at 9.30 by local time of course), and to hear that a depression was centred off the coast of East Greenland!

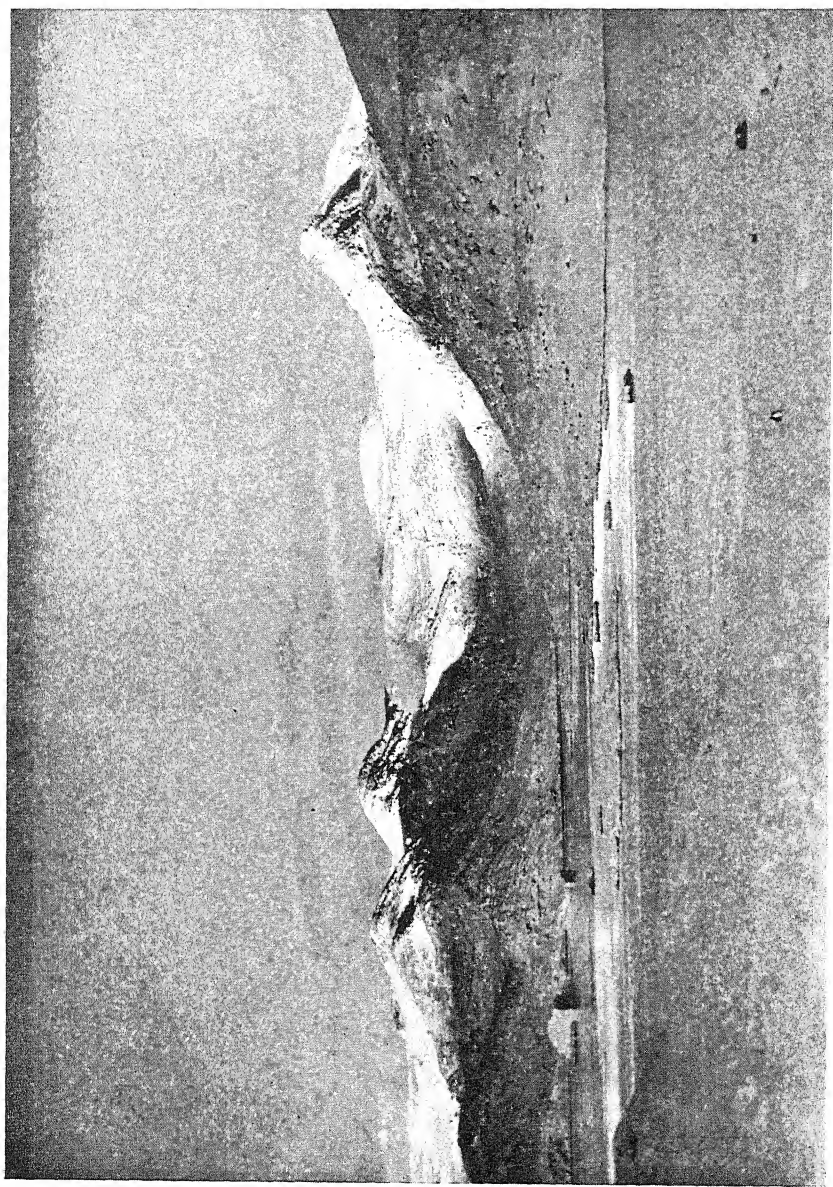
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It was amazing how little we quarrelled. Most of us had never met before the expedition started, and yet here we were spending nearly twenty hours out of the twenty-four in a hut about the size of a large dining-room. Among us we had men who had seen ten years' service in the Army, Navy and Air Force, while others were fresh from Cambridge, in some cases never before having been out of England. We had representatives from England, Scotland, Ireland and Australia—not forgetting the island of Jersey. The variety of our religious opinions included complete Agnosticism, Nonconformity and Anglo-Catholicism. We did not appear to have much in common; why were we there? But the answer to this question would cover a wide divergence of opinion. One member originally joined the Royal Geographical Society because he was under the impression that that was how to get free tickets for the Zoo on Sundays, and from that to joining an expedition to Greenland was but a small step! For some it was a career; for some a holiday, and for others, the realization of an ideal.

One man might have an unduly quick temper, another might continually be doing ridiculous things, while another might be so untidy that everything he used would be left out in the snow. Yet we had hardly any quarrels.

The average age of the expedition was very much younger than that of any other expedition: that perhaps was our saving grace. We had not reached the age when a man's opinions are crystallized; we could usually see the other man's point of view. Being young, if one of us thought another any kind of fool he just told him so in no uncertain language, and that was the end of the matter. It is the greatest mistake to brood over a thing; any difficulty or sore point must be brought to the light of day whatever effort it may cost. And any form of sarcasm is fatal.

Christmas was, of course, a very festive occasion at the Base. It was a pity that we were not all there. Courtauld was in solitude at the Ice Cap Station, while Cozens and Bingham were at Angmagssalik. Bingham had had an important call from



MOONLIGHT ON THE MOUNTAINS. THE VIEW FROM THE BASE HUT

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Angmagssalik, and the weather was so overcast that he and Cozens couldn't return in time. There were several feet of wet snow on the ground now, on which it was quite impossible to ski, or even to go far in snow-shoes; at any rate, we had seasonable weather!

After carols on Christmas Eve we got up to a breakfast of sausages and tomatoes; lunch we left out to make more room for a dinner consisting of hare soup, salmon, tongue, asparagus, petits poussins, and Christmas pudding! After that we danced till 3 a.m. The most pleasing event of the day was a mystery box from Professor Debenham marked "Not to be opened till Christmas Day." This contained some new gramophone records, a selection of novels, and some delicacies. Messages from the Prince of Wales and the B.B.C., as well as a large number from relatives at home, reminded us that we were not entirely cut off from the rest of the world.

We had hoped to have a Christmas party for the Eskimos on Boxing Day, but the snow was so heavy that they could not get over to the Base.

Fresh food was so scarce now that we were living on tinned food, while the dogs had only bone meal, and any scraps we could give them. Watkins decided that as our own fjord was not very good for hunting we should go out in parties and establish hunting camps elsewhere. But first we decided to go and stay with the Eskimos in their winter-houses, living just as they did, and learning their methods of hunting.

On December 30th Watkins, Rymill, Riley and I departed for the Southern Settlement. As it would be unreasonable to expect the natives to feed too many of our dogs we only took two teams to begin with, while Riley and I went on skis. Several Eskimos came with us. Though they seldom seemed to have the energy or initiative to go on journeys like this on their own, there were always plenty of them who wanted to come when they knew we were going.

As the Settlement was about 20 miles distant we set off at 6 a.m. It was a wonderful moonlight morning and the light on

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the new snow covering the mountains made them look even brighter than the sky. Our two sledges (of the Nansen soft runner type) were each loaded with three to four hundred pounds of equipment and pulled by teams of seven dogs in single trace. The native dogs, puny under-sized animals in fan-trace, had only to pull light hard-runner sledges loaded with their owners. The Eskimo hates to have to walk beside his sledge, and on a hill prefers to punt along with his whip-handle rather than to get off and push.

The fjord was frozen solidly at this time right down to its mouth and we crossed it first, the dogs going along at a great speed in the hard slipping surface. The next step was over an arm of the Ice Cap up which we had to climb at a fairly steep angle. Looking back from the top, row upon row of mountains could be seen standing up in the moonlight, while far out at sea the pack reflected the glory of the dawn.

On the soft snow our wide runners had the advantage, and in spite of all their whip-cracking the natives had to get off and shove. The mile-long gradual descent off the Ice Cap was exciting, but the snow was fairly slow. The next stretch was up a very steep moraine, so steep that it seemed quite impossible at first sight. However, by pushing on the handlebars we kept the sledges moving and at last reached the top, where our track led along a shallow valley on the moraine which suddenly turned and led down a steep slope into a frozen lake. On this descent we had to tie rope-drags round the runners of the sledges, but even then one of our heavy sledges rolled sideways down a small precipitous gully beside the track. As there was plenty of snow the natives could sit on their sledges and brake by digging a foot each side into the snow. The frozen lake lay among mountains which rose sharply on all sides except where there seemed to be a pass. For this then we steered. This pass wound its way among heavy boulders till all at once we saw an arm of the sea below us and beyond it again another part of the Ice Cap flanked by more mountains.

The descent on to this fjord was all but perpendicular and we

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wondered how the natives would treat it. This slope about a hundred yards long was so steep that even with soft snow it was quite impossible to attempt to ski down it. What they did was to hold on to both handle-bars of the sledge, put their feet on to the hindmost slat of the sledge and throw their weight backwards so that the angle of the runners dug into the snow, while the mass of snow which was compressed below the sledge acted also as a brake. It was a superb feat of balancing which we, unfortunately, could not with our long Nansen sledges attempt to imitate.

The fjord, which we followed for two or three miles, had a foot of snow on it, so one of us went ahead on skis to make a track. A long steep pull on to the top of an arm of the Ice Cap showed us another fjord running up to meet the far side of the ice. Several miles down the fjord we were shown a small dark object which we were told was the winter-house. After all, the Eskimos said we might get there in one day, though they had expected that we would have to sleep out on the way. The descent down on the fjord was just steep enough, under fresh snow conditions, for the dogs to be able to go at full speed and everyone could sit on his sledge. We had been out for nine hours now and it was beginning to get dark, but there was a well-beaten track running all the way to the house.

Soon we met two natives returning from seal-hunting in a neighbouring fjord. They seemed to be more well-to-do than the natives from our Base. They were dressed in seal-skin clothes with dog-skin trimmings. And there was a luxurious bear-skin rug on the sledge. Their whips were ornamented for the first foot or two of the lash, with large white ivory beads, while the dogs themselves looked to be much finer specimens than the ones we had previously seen on the East Coast. These natives persuaded Riley and me, who were on skis, to sit on their sledges, as well as themselves, and we went off at a fine speed towards the house which the dogs could now scent. Like all Eskimo winter-houses this one was only a few yards from the shore, and as we approached

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all the inhabitants appeared one after another like bees crowding out of a hive. They stood in a line making strange wails of delight to see the Englishmen arriving with their dogs: they had heard so much of these strange people, and now at last they were to see them. Everything was new to them: our unwieldy Nansen sledges; our powerful West Coast dogs driven in single trace, and with all the harness and traces of rope instead of seal-skin; our clothes, our skis, and everything about us roused their curiosity.

The house rose only a few feet out of the snow, which lay thick on the roof, and was almost level with the foot of two glowing windows which showed cheerfully on each side of the entrance tunnel. The men took care of our sledges but were afraid to approach our dogs, which seemed so much larger and fiercer than their own diminutive animals. Having let them loose and fed them on some seal offal that was produced, we turned towards the house with that delightful feeling of complete relaxation and satisfaction that comes after a long day's work in the open.

I followed the others, and bending down crawled through the low and narrow stone tunnel which led into the "ito" (the usual English spelling is igloo, which is complicated and quite unpronounceable to Eskimos as well as to us. I give the word as pronounced by the natives of Angmagssalik). What struck me almost tangibly on entering was the appalling mixed smell of rotten seal-meat, urine, dogs and children, which was utterly nauseating when encountered for the first time. The interior continued the impression of a vast stable. At the back was the sleeping-bench running the whole length of the house, and on it the natives (forty-three of them lived in this "ito") sat tending the row of seal-oil lamps which burnt brightly, each with its glowing line of yellow flame. Many wooden uprights supported the poles which upheld the roof. On these all manner of hunting gear and clothes were hung, giving the place an untidy yet homely look. The drying frames above the lamps were also festooned with smaller articles of clothing hanging up to dry.

We were immediately overwhelmed with attentions. They

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came and pulled off our wet seal-skin boots and socks, hung up our coats to dry, and would have taken all our clothes had we allowed it. The winter-house is kept so warm that the natives usually wear nothing except a small loin-cloth, and we naturally followed their example. Having made us thoroughly comfortable and given us a share of the sleeping-bench belonging to a widow named Upah, we were brought a huge plateful of tenderly boiled seal-meat to eat, and after that a tin of snow-water. Conversation was rather difficult as our knowledge of the language was still rudimentary, and the natives here, unlike the ones near our Base, didn't know what words we had learnt, but gabbled away at terrific speed.

In the winter-houses the sleeping-bench is more than 2 feet above the ground, leaving plenty of room beneath for various goods. These wooden benches were rather hard for us in our thin down sleeping-bags, but we slept well in spite of the strange surroundings. We were wakened occasionally by the babies crying, and once when there was a terrific dog-fight in the middle of the floor and several tins were upset. For the next few days we spent the hours of daylight going out with different natives learning their methods of seal-hunting, while in the long evenings we were given an insight into the daily life of these delightful people, among whom a state of ideal communism prevails.

We were woken up before dawn on the first morning, and after a hurried breakfast of cold seal-meat we put on our dry clothes and went out into the chill morning. Some of the more keen hunters were already starting off with their dog-sledges to hunt seals in the fjords several miles away. Wrapped in warm furs and sitting comfortably on a bear-skin rug on the sledge, they went away at full speed over the dark-coloured track which led straight across the frozen fjord. But the majority were hunting in a large lead of open water near at hand. They carried an ice-spear to test the ice, and a rifle slung over their shoulders. Most of them walked on skis. The native skis consist of short pieces of wood completely covered above and below with seal-skin. The curve

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is produced by tying the point back to the upper surface just in front of the toe, with a seal-skin thong. The binding is simply a piece of leather beneath which you push your toes. The seal-skin gives them a good grip going uphill, for they never use ski-sticks, while the simple binding enables them to discard the skis easily in case of danger, or if they find themselves running too fast downhill. These skis were usually about 6 feet long, and 3 inches wide, and were ideally suited to native use.

We crossed several long cracks in the ice and at last came to the edge of an open lead several hundred yards wide. The ice here was far from smooth because a great deal of old pack-ice was frozen into it. Snow had fallen on top, filling in the hollows and making it no more slippery than the land.

We arranged ourselves in a line along the edge of this lead and I was rather horrified to see other natives on the opposite side. They were not very businesslike about the hunting; several of them were smoking, while others stood about in groups talking. It was full daylight now and fairly warm except for one's feet.

A few Black Guillemots were diving near the edge of the ice, while an old Glaucous Gull flapped inquisitively past, turning occasionally to have a look at us. Suddenly a small black head appeared some hundred yards out. Immediately several natives saw it and started a low quivering whistling to attract it nearer. Others scraped with their ice-spears on the ice at the water's edge. The seal dived. The noises were continued while others got ready to shoot.

Silently the seal bobbed up again, this time much nearer. It held its dog-like head high out of the water as it swam along, turning every now and then. It seemed full of curiosity and unwilling to leave us before it had solved the mystery of the many strange animals standing on the bank. Although it was not really in range for the strange old slow-velocity rifles the natives used, several of them shot, long before they had had time to take proper aim, and the black head disappeared with a splash. Several times

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this happened, though once or twice the seal suddenly appeared only 30 or 40 yards from land; but usually the natives were far too excited to shoot straight.

After two seals had been shot and secured by a man who had brought his kayak out, all the natives incontinently started to run home. They told us to follow and by their gestures we gathered that something serious was amiss. We found that the tide had risen and that this had caused the leads which we had easily walked across earlier in the morning to open up, and already we could only just jump them.

Those who had shot seals pulled them along with a special kind of seal-skin harness attached to their shoulders. The animals slithered along behind them like black snails, leaving a trail of red blood on the white ice. In the evening we made porridge and tea for the natives, but we had to make a lot to give each family a share. As soon as they got in and had taken off their wet things, they all ate a huge meal of boiled seal-meat. It was amazing to see how much they could cram into their mouths at once. Those who had plenty of meat gave freely to the old women or widows who had none. No one was allowed to go hungry as long as there was any food to spare.

All the children and youths crowded round after this to watch us as if we were exhibits in a zoo, till one of the old men started a rival exhibition by giving us an example of the old-fashioned drum dance. He beat a small seal-skin drum, bobbed up and down and sang a weird dirge, all at the same time. The others watched his facial contortions and listened to his lament half in awe, half-humorously. Now it is only a winter evening's amusement, a survival, a burlesque. But a few of the older men can remember that fifty years ago, before the first white man came with his great wooden boats and noisy firearms, and with his new religion, the old drum dance had a wider significance. The witch-doctor, called Angakok, used to beat the drum when he went into a trance and paid a visit to the moon, or to one of the other worlds. All quarrels were also settled in this way. Instead of fighting, one

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man would challenge another to a drum dance. But already this custom is half-forgotten among the younger generation.

Then we were made to play various games with the young men. We would have a tug of war holding on to one finger or the forearm, then we played cat's cradle, and finally Watkins had to show his skill with the mouth-organ.

The next day we went hunting in the bay behind the island on which the winter-house stood. Here the ice had formed since the last snowfall and was consequently very thin and slippery. We pushed a sledge in front of us to begin with, partly to spread our weight and partly to give us something to hold on to should we go through. The ice bent and undulated at each step. It was too slippery to walk and we had to trot, taking minute steps all the time.

At last we reached the far end of the fjord, where seals were said to be plentiful. The seals are imprisoned as the winter ice forms. At first they can come up to breathe in the leads, and subsequently can easily break through when the ice is still thin. As the layer of ice thickens they have to keep open several breathing-holes, by frequently gnawing at the ice from below. If the ice is several feet thick, from above only a small hole the size of a penny would mark the breathing-hole, though the surrounding patch of differently coloured ice a foot in diameter would tell a tale to an expert hunter. From below there would be a large cigar-shaped hollow to fit the seal's body as he came up to breathe. One can find these holes and, approaching silently, wait by them till the breathing of the seal is heard. In the old days the seal was then harpooned from above, but now the natives usually shoot him with a rifle through a few inches of ice to one side of the hole. Of course a hunter may have to wait hours or even days at a breathing-hole before the seal appears, as the animal may be using another hole some distance away.

On the occasion in question we only found a few breathing-holes, which I was told were now disused. Then coming to a very fragile stretch of newly formed black ice, my Eskimo com-

panion cut a hole with the chisel end of his ice-spear and gazed down into the clear green water. In spite of the whistling noises that he made he could see no seals, so we started off home. Some of the ice was covered here with most wonderful ice-flowers, delicate rosettes of an infinite variety of structure formed under certain conditions as the sea freezes. At each step on this dangerously thin ice we prodded in front of us with an ice-spear, and after a time I found I could tell that if my spear went in so far with a fair amount of force, it was just safe for me. If it was too thin to bear us walking, we had to go on all fours or creep serpent-wise. Presently we climbed up an iceberg which was frozen into the ice (as it was covered with snow this was quite easy), and away across the fjord we saw with our glasses two other natives standing on the ice. My hunter seemed rather excited, so we went across as fast as we could, carefully testing each step.

These two turned out to be friends of his, using an implement called the long harpoon, a hunting method which is peculiar to the Angmagssalik Eskimos. Finding a suitable place where the ice was only about a foot thick, they cut two holes near together on the ice, a small one for the harpoon to pass through, and a larger hole for the second man to look down into the water. The harpoon itself was about 20 feet long and stained black for the lower third. At the end was a complicated ivory contrivance, the chief peculiarity of which was a couple of small pieces of ivory connected by the quill of a feather. A metal point, riveted into the ivory forming the last few inches of the instrument, could turn sideways and act as a barb as soon as a small leather ring slid up the shaft: this would happen as the harpoon entered the seal. The whole thing was a marvel of invention and workmanship. One man lay on the ice, with a seal-skin over his head, gazing into the water and making bubbling sounds to attract the seal. The other held the harpoon through the smaller hole, moving it up and down so that the white ivory "spinners" would dance alluringly in the water. The seal, inquisitive as usual, would appear and draw near to investigate. The moment he was directly below the harpoon

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the other man, who was watching breathlessly all the time, would give the word and down the harpoon would dart. The complete end part, to which was fixed a long seal-skin thong, would then become disengaged from the wooden shaft, and after the hole had been cut larger with the ice-chisel, the seal could be hauled out.

This method is not practised much nowadays, and we were lucky to see it in operation. It is typical of the way in which Eskimo hunting methods have reached perfection after generations of evolution, and shows how wonderfully their implements are constructed with the limited materials at their disposal.

On the way back we visited a small headland, off the point of which the natives had set nets for seals, to catch them as they swam along following the shore: but all the nets were empty.

It was already dark when we got home and the Eskimos were unusually happy. It had been a good day and several hunters had returned with seals. These were spread out on the floor of the "ito" and the women immediately started to cut them up. Although the natives are clean enough on their sleeping-benches, the floor seemed not to be considered as part of the house.

Every part of the seal is utilized. The meat is their staple diet; the skin of the big, bearded seal (*Phoca barbata*) is used for covering umiaks and for tents, and is cut into short thongs for hunting. Medium-sized skins, such as those of the bladder-nosed and Greenland seals (*Cystophora cristata* and *Phoca Greenlandica*), are used for covering kayaks, for making waterproof clothing, and the soles of boots; while the small fjord seals' skins are used to make clothing, dog-harness, boots and gloves. The sinews are carefully cut out and separated, then plaited together, being rubbed up and down the cheek to twist them together. As seal sinew stretches when wet, it makes the only known perfect water-tight stitching. The blubber is not only used in the lamps but is eaten raw by itself, and the oil used to pickle berries, the leaves of the sedum and dwarf birch, or almost any other food. Not a drop of blood is allowed to waste, but is kept and poured into the skin of the stomach to make blood-sausages. The liver and kidneys are, of course,

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delicious, while some of us thought the head the best part. When boiled, the intestines themselves are quite good, but, as far as we were concerned, only if there was nothing else to eat.

There was a dance after supper on the level hard-beaten snow outside the "ito." Seal-blubber flares were lit in the snow to augment the fitful gleam that came through the windows, and we danced to the music of accordions and mouth organs. It was a bright starlit night, with the green aurora holding a rival dance above us. In the old days we were told the Eskimos thought that the happy dead were playing football up there with a walrus-skull. We were not sorry to whirl round to their jigging double-time, for there were about 30° of frost outside. In spite of this, the scantily clad children seemed quite cheerful. After the dance we played various old Eskimo round games which were pleasant and rowdy. The Eskimos are a most carefree people, and on an occasion like this they go almost wild with delight, young and old shouting and laughing like happy children.

Next day Watkins decided to take a few seals over to the Base and collect some of our food. We were quite happy living on seal-meat, but the natives were very disappointed that we hadn't brought any bread, oatmeal or coffee with us, and it seemed only fair in return for their hospitality to give them what they wanted. The natives told us that it was just possible to reach our Base in one day, especially if one started before dawn, as we had done when we arrived. Watkins had a team of eight powerful and fit dogs, well trained now in the single-trace method, and he decided to try and do the double journey in a day. He set off after breakfast, and with little load other than himself on the sledge, went down the track over the fjord at a wonderful speed, the dogs all barking with delight and galloping as fast as they could.

In about eight hours' time there was great excitement in the "ito"; a sledge had been sighted coming at terrific speed down the smooth glacier-slope 3 miles away. It could be seen that it was one of us, and the natives wondered why Watkins had returned

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so soon. He couldn't have got more than half-way to the Base, they said.

At last with a final spurt Watkins' powerful dogs pulled his sledge over the uneven tide-crack and up the short ascent to the "ito." He had been the whole way to the Base, of course, and had done about 40 miles, some of it over rough and steep going, in just over eight hours. The natives were quite incredulous at first, but there was the stock of provisions to prove it.

In the next few days the outer world was obliterated by a series of tremendous blizzards. "Anotsa ankaïou" was what the Eskimos called this sort of gale: our name is unfortunately unprintable! The first "anotsa" approached from the north. One of the natives came running up breathless and excited, pointing to a small white cloud like a man's hand blowing off the top of the Ice Cap several miles away. All the hunters returned as quickly as they could, and soon the snow was being blown off the glacier and the surrounding land in a great sinister cloud several hundred feet high. But they were all very uneasy. Two hunters had not yet returned. Would the sea-ice be swept away before they got back, and would they be able to find their way in the maelstrom of drifting snow? However, at last they came in, their faces masks of ice and their clothes encrusted with snow. The ice had already broken up in one place and they had been forced to make a long detour. The blizzard raged all that night and most of the next day. The low, solidly built winter-houses offer little resistance to the wind and though there are records of a roof sometimes being carried away, they are as safe as anything can be in such a gale.

When the wind died down it was seen that all the ice had been blown out of the fjord, except at the very head. There were many miles of open water to the south, and immediately we started to get ready to hunt, for as soon as open water appears the seals come in close to the ice in large numbers. During these preparations I saw several Ivory Gulls flying round the "ito"—snowy white birds with black legs and eyes. These beautiful creatures had

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been driven in by the gales and were reduced to eating offal from the "ito."

We all ran down to the ice with our rifles and ice-spears, but were soon stopped by a lead about 10 yards wide. One or two of the natives had brought kayaks, either carried on their heads, or pushed in front of them on a sledge. They could easily cross, but we had to find a place where there were several lumps of ice, then to jump from one to the other, occasionally paddling the floe along with an ice-spear when the gap was too great. Then, at an interval of about a hundred yards, we covered a mile of the water-edge and waited for seals. Soon they appeared in great numbers, and in spite of ridiculously bad shooting on the part of the natives, we secured about a dozen. I was using a Mannlicher Schoenauer .256, and was able to hit seals at a much greater distance than the Eskimos could. I got three that day and was very pleased with myself.

On January 10th we were just returning from hunting when Scott arrived on skis with very bad news. Apparently the wireless operator from Angmagssalik had been invited over to the Base for a few days in return for his many kindnesses to us. On the last day of the old year Cozens had flown over to Angmagssalik, and returned with him. They had had a great party at the Base, the two operators conversing by tapping on their plates with knives. After dinner they had heard the B.B.C. start off their grand goodnight by wishing "a Happy New Year to the British Arctic Air-Route Expedition who are spending a year in Greenland's Icy Mountains", and later there had been a moonlight ski-ing party. It was altogether a memorable day, the temperature at the Base falling below zero for the first time. Next day Cozens had flown back to Angmagssalik with the wireless operator, while Lemon set off on a visit to a settlement at Sermilik Fjord, so there was no wireless communication between the Base and Angmagssalik. Several days passed with no sign of Cozens, and they began to get anxious, especially when on January 6th, 7th and 8th continuous gales raged with such persistence that all

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this time the far side of the fjord was invisible from the Base. At last on January 10th Lemon returned, having been delayed by the gales. He got into communication with Angmagssalik and heard the distressing news that the Moth had broken from its mooring during the gale and in Cozens' opinion was smashed beyond repair, though the engine was still intact. Poor Cozens, being unable to communicate this news, had been brooding over it since January 6th, when the accident occurred.

Next day Watkins set off with Scott to return to the Base. It had been one of the most cherished schemes of the expedition that in February or March a flight should be made from our Base across the Ice Cap, over Disco Island to Baffin Land and then down the far side of Hudson Bay to Winnipeg, and back. Depôts of petrol and oil had been left right along the route. Now, with only one Moth, it looked as if the flight would have to be abandoned. On January 12th Watkins and Hampton flew to Angmagssalik in the other machine to see the extent of the damage. Hampton, who had enough spares to build almost a new aeroplane as long as the engine was intact, hoped to repair the machine. They found that one wing was reduced to matchwood, while the other was considerably damaged, the tail had been carried away and the whole longiron was bent. Hampton decided he could mend it in time.

They returned on January 17th, and next day Hampton and Rymill, who were to start on the repairs (which would take about six weeks of really hard work), were ferried over to Angmagssalik with enough spares to start on their job at once. The Canada flight was at any rate off till the beginning of March.

After this our hunting camp broke up and we returned to the Base and started hunting seals there in the light of our new knowledge.

At the Base life continued in much the same way. It was still too warm to be comfortable, and the hunting was bad. The only seals available were the ones we had brought over every few days from the hunting camp. Unfortunately at this stage we had not



SALVAGING THE AEROPLANE AFTER THE GALE AT ANGMAGSSALIK

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learnt how to use kayaks and most of the seals we did shoot were not recovered. In winter, when the seal has a good thick layer of blubber on him, he will float when shot in the head, especially in salt water: unfortunately in the fjords the water is fairly fresh. Some large fish-hooks bound to a heavy wooden ball attached to a line proved a fairly efficient method for recovering seals if they floated down to the edge of the ice. One could also paddle out to them, using a piece of ice as a boat and an ice-spear as paddle, but this was rather a dangerous method.

Riley and I went out one day to recover a seal I had shot. We could see it floating more than a hundred yards out. Riley had been in a kayak once or twice before and thought himself fairly safe if he went carefully, so he borrowed Watkins' kayak and went out to get the seal. On his return, just as he was approaching the ice, he tried to swing round and, making too hurried a movement, overturned. Luckily I could just reach the end of his kayak with my ice-spear and was able to pull him out, still upside down, on to the slippery ice. It was winter, and his clothing stiffened as he ran home, but he was none the worse for his soaking.

On another occasion I was hunting alone out on the sea-ice several miles from the Base. I was following my footmarks of the previous day, when I had carefully tested the ice every few steps. I was crossing a place where a lot of brash-ice had frozen together, forming a bridge over what had been an open lead a few days before. Treading carefully in my previous footmarks I thought I was quite safe. But I was wrong. Suddenly I went through, everything except my head going under. I tried to pull myself out on to the ice, but it was too slippery, and my hands were soon too cold to be of much use. Then I had an idea: I held on with one arm and got out my sheath knife with the other and cut some finger-holds in the ice. With a terrific effort I managed to struggle out. It seemed rather a good opportunity to see what would happen if one went on hunting. It might happen some day that I would fall through the ice many miles from any shelter,

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and it would then be useful to know whether one would be in danger of frost-bite through walking till one's clothes dried. I stayed out another four hours that day, and as long as I ran or walked fast I suffered no pain at all from the cold.

On January 13th Scott started another hunting camp in a fjord between our Base and the Southern Settlement. Bingham, Stephenson and Lindsay made up the party. Its success was ruined by bad weather, which always broke up the ice and confined them to their tents. They had one really bad blizzard on January 16th. At 6 a.m. the wind began to blow. The double pyramid tent which Stephenson and Bingham shared was pitched on a snow-covered level place: the tent-flap was held down with ration boxes and snow. By 9 a.m. a patch of light flickering on the back wall of the tent showed that the snow had been blown off in one place and that the outer tent was coming adrift. They both put their windproofs on, and while Stephenson kept his weight on the inside of the tent, the Doctor went outside to tighten the guys and put more snow on. After ten minutes he came in feeling as if he had just played a really hard game of rugby. Each time the snow had been blown off the spade before he could pile it in the flap, and nothing could be done. By this time the tent-walls were almost touching inside and both men had to sit on the inner flap of the tent and lean against the wind to try and keep the tent from blowing down. Often, in more severe gusts, they were hurled across the tent. This continued till 3 p.m. when the thing got beyond a joke. The corner bamboos had moved nearer each other, and at any moment it seemed as if their tent would go. The nervous strain was terrific. All their kit was packed up ready. The primus had long ago run out of paraffin, and they just sat on getting colder and colder. The roaring and flapping of the tent prevented all conversation. At last by 7 p.m. the gale died down and they could relax again. For ten long hours they had held the tent down, expecting any moment that it would get blown away. This was the third blizzard in one week: little wonder that seal-hunting was not very good. Later

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a bit of treacherous new ice a hundred yards wide shut them off from the open water, quite preventing hunting, and they had to return to the Base.

In these dark winter days the temperature often varied from 5° F. to 38° F. in a single day, till on January 11th the sun, after a month's absence, returned to remind us that spring was not far away. We wondered when the cold weather was coming. Perhaps it would never come.

And so January came to an end. Every few days the aerial and one or both of the wireless masts had come down, until it became quite a matter of routine. Fresh food was still scarce, though seal-meat was varied by a fair number of Black Guillemots which we were able to shoot in the open water. Already the seals were lying out on the ice, basking in the sun. We had not expected this to happen till March or April.

The blizzards caused tremendous snowdrifts, usually burying the stores which had been so meticulously sorted, and in front of the hangar putting a barrier about 6 feet high, which had to be dug away before the machines could be got out. Then getting them down to the sea-ice was a job requiring everybody's help.

At low tide, naturally the level of the sea will be as much as 6 or 8 feet below the level of the land, and between the two is a belt of rough ice-blocks in such disorder that it is often impossible to get a sledge across, much less an aeroplane. At high tide the ice-blocks float in a belt of open water, so that great care has to be taken when crossing. You have to jump quickly from block to block before they sink beneath your weight.

When the aeroplane was wanted outside, everybody at the Base was assembled. Then, supporting the tail-skid on a sledge, we hauled it over the tide-crack, often having to build a gangway of blocks of ice. Quite often after a minute the airmen would decide it was not a good enough day, and the machine would be hauled back again. We got quite used to this in the changeable winter weather.

Our plans had already been altered materially by the severe

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weather conditions. It was clear that there would be no winter sledging journeys down the coast, as the wide belt of pack-ice never froze firmly on to the new ice in the fjords. In fact land-water was present all the year, and the only way of reaching settlements North and South of the Base was by sledging over land and only crossing the inner fjords of the sea.

We hoped the spring journey to Kangerdlugsuak would start on March 1st. The Canada flight also was to take place at the beginning of March, so Rymill, who was going to Canada, would not be available for the journey to Kangerdlugsuak. Furthermore, it was obvious by now that the aeroplanes would not be able to land on the Ice Cap in the winter; consequently Courtauld could not be brought home till spring sledging could start, and he also would not be available to go to Kangerdlugsuak. Eventually Stephenson, Wager, Lindsay, Bingham and I were in readiness to go north the moment the good weather started.

The five of us were to sledge up the Ice Cap edge to the food dépôt at Kangerdlugsuak. Wager would then be left alone to geologize there, while Stephenson and Bingham would sledge up the sea-ice as far as Cape Dalton to survey. Lindsay and I would go up to the New Mountains (which had been discovered by aeroplane in September) and make a map of them before we all foregathered at Kangerdlugsuak and returned to the Base in time to catch the boat home. We hoped to have time to climb Mount Forel either on the way out or on the return journey. For this we would need four sledges. As so many sledges had been damaged beyond repair on the seven winter journeys, this was now our limiting factor, and since Christmas we had been busy repairing and remodelling them from the broken bits we had left.

At the beginning of February, Watkins thought it would be a good thing to start sledging dog and man food up to the Big Flag Dépôt in preparation for the spring journeys. Previously we had been delayed for days on Bugbear Bank and this was always a disheartening start to a journey. But if the bulk of the loads could be conveyed to the Big Flag before the spring journeys

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started, much time would be saved. There was a full moon at this time, so on February 1st four of us left the Base at 6.30 a.m. and did the journey there and back in ten and a half hours. It had taken us three weeks merely to reach the Big Flag four months earlier. For the next week loads were taken up on hard-runner sledges each fine day, usually starting at 2 a.m., so that the parties could return before dark.

The stream issuing from the foot of the glacier had continually overflowed and re-frozen till now there was an icy track up which it was possible to sledge from the fjord right up to the glacier-foot, thus avoiding the gruelling job of carrying loads up the steep rocks.

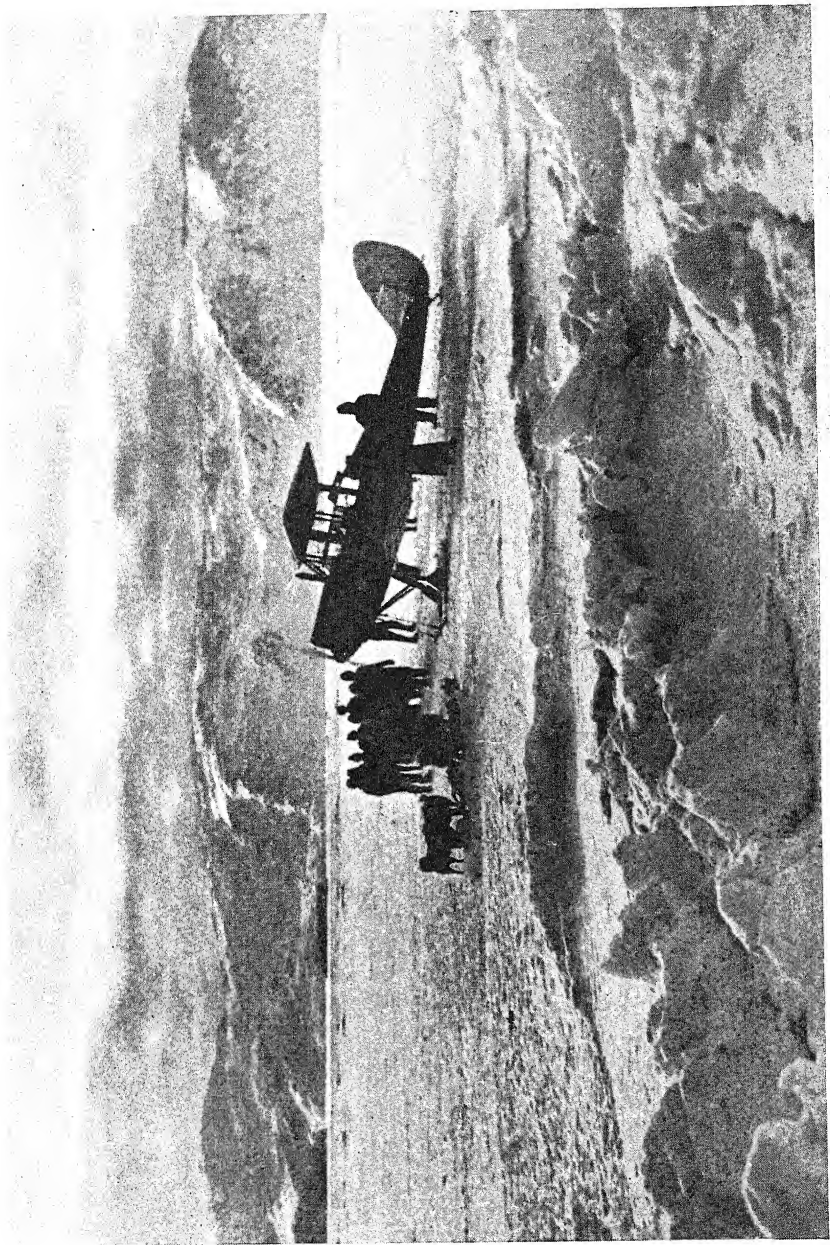
A record run was done on February 9th, when the Doctor and I got there and back in eight hours. It was a distance of about 30 miles in which we climbed a height of 4,000 feet. Going up was pretty hard work. We had found a new way up Bugbear Bank, and a series of deep steps had been cut in the ice. Keeping to these we could push on the sledges and get them up one at a time with loads of about 250 lb. The crevasses were quite safe if one followed the track, and it was merely a question of following the best contours to reach the Dépôt. The descent was most exhilarating; with empty sledges the dogs went downhill marvelously fast. Coming down the Bugbear had often proved disastrous. The Eskimos used to hobble the dogs by tucking one front paw into the collar, then, disconnecting the dogs from the sledge, they would bring the latter down themselves. When we tried this, our dogs usually ran the whole way to the Base, leaving us to drag the sledge home ourselves.

When the Doctor returned from our record journey he was immediately called off to examine D'Aeth, who had met with a most unfortunate accident. He and Cozens were looking for an oil leak on the Moth. The switches were disconnected, so that although the starting switch read "off" it was really "on." Both of them knew this but momentarily forgot it. In the course of this work D'Aeth turned the propeller slowly, the engine fired and it whizzed round. D'Aeth was standing on a slippery lump

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of ice and, being unable to step back in time, was caught by the propeller and thrown across the hangar. The propeller hit his elbow and then smashed a heavy torch which was in his hip-pocket. He was carried up to the Base. By the time the Doctor arrived the whole elbow was so much swollen up that he found it difficult to deal with it, but set it as best he could. After a few months D'Aeth could use it, though it would not bend as far as previously. It later transpired that the elbow-bone had been broken but had set well. It was extraordinarily lucky that no more damage was done. Not many people are hit by propellers and live to tell the tale.

Two flights were made in February, chiefly to look for the Ice Cap Station and to drop letters, books and luxuries to Courtauld. It was not till February 8th that conditions were suitable to look for him. D'Aeth and I then went up, it being the day before his accident. This was my first flight, and it was exciting to be making it over the frozen fjords of Greenland. We took off on skis so easily that I didn't know we had left the ground till I saw the ski-tracks and flags receding below me. From above, the whole fjord was transformed and elucidated. Stumbling about among the floes I had seen through a glass darkly, but up here all its secrets were revealed. A fox-track which I had followed for hours on the day before, and then mysteriously lost, could now be clearly seen running along the edge of a lead and then disappearing into a pile of snow-covered rocks. I could see the tracks where seals had been dragged home from all parts of the fjord, the patch of blood on the ice where they had been shot, and the tracks of our dogs coming out to investigate. What had seemed a maze of tangled ice-hummocks and pack-ice when one was sledging through it, now devolved itself into a series of separate ice-pans all frozen into a dark mass of new ice. The settlement appeared as a dirty stain on the snow, with the natives outside it all gazing skywards. We swung over the Ice Cap, gaining height. At ground-level the temperature was 12° F.; at 1,500 it rose to 15° F.; at 4,000 it fell to 4° F.; while at 9,000 feet it was — 8° F.



THE MOTH ON THE BASE FJORD IN WINTER

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I could see the coastal mountains all spread out below like a dream country, and far away to the North the range of Forel, jagged and forbidding. From above, the surface was a series of small hard black shadows caused by the wind-drifts which ran in parallel ridges. There seemed to be one series of drifts overlying another at a different angle, and the whole made such a speckled impression that it was quite impossible to pick out flags or even—had we got there—to see the Ice Station.

After getting more than half-way, D'Aeth saw a low bank of cloud ahead. We could not rise above it with so heavy a load of food and luxuries for Courtauld, and had to turn. On the journey back we were able to pick out Lemon and Lindsay, who had sledged up to Flag 56 (10 miles beyond the Big Flag) to look for the wireless set which we had left there in November. They saw no sign of it, however, although the dépôt had been 4 feet high and well marked with flags only three months before, and they must have passed within a hundred yards of the place. We wondered what the Ice Cap Station would look like now.

A series of gales prevented more attempts to reach the Ice Cap Station for several days. There were five gales in the third week of February, each one lasting the whole day. In the last of these the Stephenson screen was carried away and several boxes were blown into the sea. On Friday, 20th, a gale occurred which made such a drift in front of the hangar that it took several days to clear. Four days later the machine was extricated in time to fly to Angmagssalik to get Wager, who had been there for some time geologizing, and then for the Missionary, Pastor Rosing, who was coming to stay for a few days at the Base. On the way a load of spare parts was taken for Hampton, who was still working on the damaged machine.

The Pastor was a most delightful man. He had helped us in many ways to deal with the natives, who almost worshipped him, and had given us information about local conditions. He was a West Coast Greenlander, that is to say of Danish extraction, and his beautiful wife was of the same blood. His object in life was

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to make the natives adhere to the better part of their earlier culture while embracing the Christian religion.

The weather improved towards the end of February, and on February 25th Cozens and Scott flew in again to look for the Ice Cap Station. They flew what they thought the requisite distance in one hour and 20 minutes, but as it took them only one-third of the time to return, they realized that they had been flying against a tremendous head-wind and had not nearly reached the Station. Next day, although the snow was starting to blow about a little on Bugbear Bank, Cozens flew back to Angmagssalik with Pastor Rosing. He landed rather nearer the settlement than usual and hit a hidden ice-hummock. The under-carriage was driven through the fuselage of the machine, but luckily no one was hurt. Hampton, who was still there repairing the first casualty, said it would take four weeks to mend, and he had still three weeks' work to do on the other 'plane. This meant that the Canada flight was definitely off—a great disappointment to all concerned.

All this time and for another seven weeks Hampton and Rymill had been working on the aeroplanes. The chief trader at Angmagssalik gave them a shed, and though the temperature was often below zero they worked there from nine in the morning till midnight, with time off only for meals. The native women helped to sew the fabric on the new wings, and when fabric ran out they were forced to use the cloth of which the Eskimos make their shirts. The local native carpenter fashioned from driftwood a new tail-plane which, when covered with shirt-cloth, was as good as new.

By the middle of March the first machine was ready. Hampton and Rymill made a trial flight, anxiously watching the tail and new wings. Everything was in good order, and she was brought over to the Base on March 19th.

CHAPTER VIII

Spring and Some Unsuccessful Journeys

ALL through February the blizzards continued with increasing frequency and violence, and it was quite impossible for a journey to start up the Ice Cap. We could only repair the sledges and get the dogs fit for the time when the weather should make sledge travel possible. Fresh meat was still scarce, and several journeys were made over to the Southern Settlement for seals. There, with a providence most unusual in the Eskimo, they had a store of about a dozen large bearded-seal carcasses buried in the snow, and we were able to buy some of them. So frequent were the gales that several times we got caught in them on our way to and from the Settlement. If the wind really starts blowing the only thing to do is to make a hole in the snow and wait till the gale stops. Though we were always prepared for this we never actually had to do it; usually we could stagger on as long as the dogs could be made to go on pulling.

Towards the end of February a new kind of dog food providentially appeared, in the form of sharks. Fabulous tales came from the nearest Settlement of how Nicodemudgy had caught fifteen in a single night, and that most of them were as big as seals. Lemon and I immediately sledged over to the Settlement to see how it was done.

At this time the ice between our Base and the Settlement had all been blown away, and we had to sledge over the hills, which are extraordinarily steep just here. The natives used to sledge as far as they could on the sea-ice, and then hobble their dogs by putting one front paw through the harness, and walk over the hills to the Base, just leaving the dogs there till they returned,

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which was sometimes not till next day. Though not intentionally cruel, they seemed to have no idea of being kind or thoughtful to animals. Lemon and I pushed our sledge up the steep mountain-sides and somehow managed to hang on to them on the descent. Then sledging over a chain of lakes we met the head of Tasiudaley Fjord, and after crossing another chain of lakes reached Supertok, the fjord to the east of the Settlement. Apparently shark-fishing could be done only at night, but we went down on to the ice half a mile or so from the Settlement to examine the preparations. An oval hole about 10 feet in length had been cut with ice-chisels where the ice was about a foot thick. At the extremities of this opening two smaller circular holes were cut, connected with the main one by narrow necks of water. One of these holes was cunningly used as a trap for the small pieces of ice which floated about and prevented one seeing clearly into the water. They were swept through the narrow opening with an ice-spear and prevented from escaping again by the pressure at the narrow mouth of the hole. The other small hole was used for the bait, which consisted of any refuse that could be found. In this case a dead dog and some seal's entrails were used. A lump of ice perforated with small holes had been placed underneath this hole so that the meat could not be taken from below but would stain and soak into the water. Two blocks of ice were leant against each other above the hole to stop the dogs stealing the bait. In the morning some pieces of rotten blubber attached to stones had been dropped down to attract the sharks on the bottom of the sea.

After seeing the trap we returned to the "ito" to snatch some sleep while we could. Just at this time there was a period of food shortage at the Settlement. There was plenty of open water, too much in fact, and in the few days of reasonable weather between the gales the hunters had been unsuccessful. They had a few berries to give us, and some sedum leaves pickled in putrid seal-oil, which had been kept since the previous year. Otherwise they had been subsisting on boiled seal-skin and seaweed for the last day or two. They can get berries in almost every month of the year.

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The blizzards blow the covering layer of snow from them and there they are all ready in cold storage. These berries are the salvation of those land birds which stay the winter, the Raven and Ptarmigan, but what they do during the gales I could not discover. I could find no trace of the Arctic Foxes eating berries, though they are often reduced to eating seaweed. I think they manage to catch Black Guillemots by waiting for them at the edges of the leads. Once or twice I found the remains of these birds, and we frequently saw fox-traces right out on the fjord. The foxes are supposed to follow the Polar bears, finishing up the remains of their feast; but as there were so few bears near our Base we could not prove this. Certainly the foxes used to scavenge round the shark-holes, where there was always plenty of refuse.

After dark Nicodemudgy woke us up and said the time was ripe to start. We put on our seal-skins and went out. There were several natives there and a few girls and children. They were waiting beside the hole with the harpoon that is used for catching seals at their breathing-holes. A complicated barbed metal harpoon-head, with seal-skin line attached, fits on to a long handle with a metal head. The natives were rushing round the hole shrieking as loud as they could—to attract other sharks, so they said. In spite of this, however, the sharks appeared soon. One of the natives shouted excitedly, and looking down I saw a pale ghostly shape moving slowly in the water. It came up to the surface and started to eat some shark-liver that was hanging over the side. Nicodemudgy struck it with his harpoon and hauled it out of the water by the line. The shark offered no resistance, in fact it actually assisted by wriggling its tail gently during the operation.

The shark was like a huge black dog-fish, being 8 or 9 feet long and weighing over a hundred pounds. It had an evil mouth full of horny teeth, which were immediately cut out and thrown back into the water so as to render the fish harmless, a necessary precaution, especially if the dogs come near. Then the shark was cut in two, ready to be sledged away, and the guts

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were thrown back into the water. We got several more during the night. There was only one harpoon there, and on one occasion two sharks appeared together. While one was being harpooned the other came to the surface and started placidly eating some offal. A young Eskimo then bent down and putting a finger in each eye-socket calmly pulled it out on to the ice. The eyes were very curious, having in most cases a parasite an inch or two in length depending from the pupil. Load after load of shark-meat was sledged back to the Base as soon as the fjord was bearing again.

By this time Courtauld's parents and others at home were getting rather worried, and not realizing what the conditions were like in Greenland were naturally wondering why no one was being sent up to relieve him. In consequence of this a relief party set off somewhat earlier than they would otherwise have started, as the gales had by no means abated. On March 1st Scott and Riley left for the Ice Cap Station. Scott was the most experienced winter traveller among us and Riley went up to take Courtauld's place in charge of the Station. Stephenson, who was in charge of the sledge-repairing, got two sledges ready, leaving four for the Kangerdlugsuak journey which would start as soon as the gales stopped.

Lindsay and I went with them up to the Big Flag where their supplies awaited them. Since our last journey there the surface had deteriorated terribly. The wind-drifts were so big that a team of dogs could be completely hidden in the hollow, and so hard that it was like sledging up and down stairs. Another curious thing was that the crevasses were now either exposed or else worse than that, were not visible and were covered by a very frail snow-crust. I was walking along holding on to the handle-bars of my sledge on a slope where we had met no crevasses in the winter or autumn when suddenly I slipped through. I was going uphill and my sledge started to slip back on top of me till it came to rest against my legs, which were braced across the crevasse. I

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yelled for all I was worth at the dogs and they rose to the occasion and pulled both the sledge and me out of the crevasse. Fortunately there was no real danger as the crevasse was too narrow to admit the sledge, and I had a firm hold of the handle-bars. It took us five and a half hours to reach the Big Flag and four and a half hours' travelling by moonlight to return to the Base.

There was some excitement next day at the Base when a bear was killed in our fjord by the natives. This was not poaching since they had followed its tracks for 15 miles over the Ice Cap and across the heads of the fjords. In the autumn and winter the bears up in the North of Greenland hunt seals out among the ice-floes. Sometimes they get stranded on a floe and being poor swimmers may get carried far down the coast. When they eventually reach land they may be hundreds of miles South of their homes. Then, as it would be impossible to get back on the ice, and most laborious and dangerous to follow the coastline, they walk back over the Ice Cap. We had been told this by Nicodemudgy but had put it down as a myth, till we were on the Ice Cap in May and actually found the tracks of two bears going straight Northward: this was 30 miles in from the nearest land and at a height of about 5,000 feet above sea-level.

The bear that the natives killed was making his way Northward when his track was found by one of them. The latter drove as fast as he could back to the Southern Settlement where he lived, and collected all the hunters he could find. Eight sledges then returned to follow the line of footmarks in the snow, each one about a foot in diameter. At last the bear was seen crossing the fjord a mile or two from our Base. Then dogs who were noted bear-hunters were liberated and went galloping down the track, knowing well what was toward. The Eskimo traces are so constructed that any dog can be hauled in and liberated while the sledge is still travelling at full speed. The other dogs, all wildly excited, were held back by their loads, but followed at top speed. The three loose dogs rushed after the bear, and when they got near snapped at his heels. This is the bear's sensitive part and he stopped and

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turned at bay, ready to hurl the dogs for many yards with his massive forepaws. But the dogs were prepared for this and kept their distance. The bear smelt and saw the hunters coming and made off once more, but was stopped again in the same manner. Finally the sledges arrived and the bear was shot. In the old days the bear was killed with a lance, and many of the Eskimos have honourable scars received when they have slain bears with a lance in single combat.

Old Nicodemudgy had killed ninety-two bears in a lifetime of fifty years. He could remember the details appertaining to each one. When we asked him he related the long list, while his daughter—who herself had killed two bears—counted them up on her fingers. "There was the one that I shot on the top of an ice-floe from my kayak: when it fell it almost swamped it with the splash: I was very young then. Then there was the bear we tracked for a day and a night. He broke my lance and I had to strangle him with seal-skin line; he was the biggest bear I ever saw. . . ." and so on.

On March 2nd Arpika, vigilant as usual, saw a black moving speck at the head of the fjord, and after exhausting all other possibilities we realized it must be Scott and Riley returning. After just over a mile of the most awful going they had ever seen or imagined, one sledge had completely broken down and they knew the only thing to be done was to dash back to the Base with the remaining one and collect more sledges. Clearly such large loads could not be carried over such a surface, and to reduce the load on each sledge Lindsay was added to the party, which would then have three sledges in all. Two new sledges had therefore to be found. This meant that Stephenson would have to reduce his party for the Kangerdlugsuak journey. It was bad luck, but the relief of Courtauld was the most important consideration. They set off once more to pick up the extra food at the Big Flag, and to collect their previous dump.

After they had gone we started to collect as much shark-meat as we could get, and put it on the roof of the hangar. There

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was otherwise no fresh food for the dogs, and they seemed very fond of this, though we had to be careful to give them only a little at first, as it had an intoxicating effect on them. We ourselves found it quite inedible—a kind of tasteless grey gristle. But the Eskimos loved it. They would hang lumps of it up in the “ito,” waiting till it was really putrid, then eat it in great mouthfuls. Between us we conveyed more than 1,000 lb. of shark carcasses over from the Settlement, and when that supply was ended we cut a hole in the ice near our Base and caught many more.

The weather turned warm again now, and as there were 6 or 8 inches of soft snow on the sea-ice, sledging was most unpleasant. On February 26th we recorded our record low temperature of -2° F., but on March 5th it was up to 44° F., rain started to fall, and a lake formed behind the hut. Though this was the month in which we were supposed to get really low temperatures.

At this time we had no fears for Courtauld unless something very unexpected had happened. We knew he would have a busy time keeping pace with the drifting snow, but his food would last him another two months at least.

On March 7th it snowed all day and later the wind got up. We saw the fresh snow being whirled skywards on Bugbear Bank and knew what a maelstrom there would be up there. We hoped that the relief party would by now be beyond this coastal weather. Imagine our amazement, therefore, when Scott's party suddenly returned again just as we were sitting down to supper. They had had a pretty grim time since leaving the Base, and had no clear weather at all. The snow had been falling or drifting for three days, making the visibility never more than 40 yards. Consequently they had been quite unable to find the Big Flag, a thing we had often been unable to do even in clear weather. Unfortunately they had relied on reaching the depôt that night, and though they had a tent with them they had neither food nor primus. Luckily Riley, having some premonition perhaps, or because of his naturally careful nature, had “brought a few

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biscuits for lunch." When counted there had proved to be over twenty large sledging biscuits, and these at the rate of two and a half each per day had been their only food. What water they obtained had to be melted down in a pan over two candles which one of them had brought. After three days, in which the weather showed no sign of clearing, they finished their food and were forced back to the Base. Harnessing sixteen of their dogs to one sledge, they started to plod back through snow that was so deep that it came higher than the top of the load on the sledge. Even with snow-shoes they sank over the knees, and without them the snow reached their waists.

On March 9th it was clearer, and following in their track, which ran like a railway cutting across the glacier, they set off for the third time, more than a little dispirited. The thermometer was higher than ever, being 39° F. The wireless told us that in England there were 9° of frost, and we cursed our luck to be living in a warm country. The snow round the hut was thawing into a myriad tiny rivulets which found their way everywhere. Irrigation trenches were dug to drain off the water as far as possible.

By now, in the hot sun, seals were dotted about the fjord basking in the warmth. They would lie on the ice ready at the least sign of danger to slip back down the hole, a foot in diameter, through which they had got out. It is in such circumstances that the Polar bears stalk them and the seals are accordingly as wary as foxes. If you watch a seal out on the ice he will put his head down and sleep perhaps for five seconds, or maybe as much as twenty, but rarely more. After that he lifts his head and peers nervously all round him. Then he may scratch his stomach with a hind flipper and wriggle an inch or two nearer his bolt-hole before falling asleep again. There are two ways of hunting him under these conditions. The method advocated by Stefansson is to wear dark clothes to deceive the seal by pretending you are a seal yourself. He cannot see much more than two or three

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hundred yards, so when you get within that distance you lie on the ice and wriggle forward. When you get nearer you have to copy the movements of a seal with more precision. You must lift your head and search the threatening horizon. You must scratch yourself with a hind foot and steal hasty naps of a few brief seconds' duration. Eventually, if you are a skilful and a patient actor, you get within range and shoot.

The other method, which we found much quicker and more pleasant, is to stalk the seal under cover of a white cotton screen. This screen is fixed to the rifle-rest, which is fitted with miniature runners so that it will slide along the ice. Crouching behind this you are invisible to the seal. But you must get on the leeward side of him and must make no noise with your feet, a thing very difficult to avoid when there is as much as a foot of frozen slush on the top of the ice. Each time he puts his head down to sleep you hastily advance a step or two, stopping the moment he awakes. If the seal seems uneasy and edges nearer his hole you must wait for a quarter of an hour or so doubled up behind your screen. At last you are within a hundred yards. You can see his spotted body and his ludicrous little front flippers. The last few yards are always the worst and may take a long time to cover. His naps become ever shorter, he sniffs the air nervously and waves his hind flippers in the air, but his eyes reassure him and the head goes down once more. You are within 30 yards and lie down to shoot, carefully aiming at his head. Before the sound of the shot has stopped echoing off the icebergs you must run up and get hold of his hind flippers before he slips back down the smooth sloping gangway into the water. The impact of the shot is enough to start this movement, and as he goes under at an angle he will come up under the ice several yards to one side and be irretrievably lost. Having secured your seal you harness yourself to him and drag him home across the ice.

By March 10th we were ready to start for Kangerdlugsuak, but there was a very serious sledge shortage. Stephenson, Wager,

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Bingham, Lindsay and I had been chosen for this journey, but now Lindsay and two of our sledges had gone elsewhere. At the very most, using all the available material, we could muster only two sledges. These were most carefully repaired, for they would have to carry extremely heavy loads. Stephenson and Bingham put in oak angle-blocks to support the cross-bars, and oak blocks between the uprights and the runners. By March 12th the sledges were ready and we set off across the fjord. A gale had started at three in the morning but by six had died down again. Perhaps this was a bad omen, and we should have taken warning. But we had had twelve days with only one big snowfall, and it seemed as if the bad weather was over at last.

Just about six, as we were lashing up our sledges, Nicodemudgy turned up to say good-bye. He had walked 10 miles over the hills from the Settlement to wish us luck. The Eskimos were very excited that we were going to Kangerdlugsuak, which to them has become an almost mythical land of promise full of bears, walrus and narwhals. Our staff bade us a sad farewell. With the curious fatalism of their primitive natures they never expected to see us return when we set off for the Ice Cap.

The same day, March 12th, I was lashing up my sledge when I heard a familiar sound and looking up saw a Snow Bunting, the first migrant of the year, flying over the Base. This surely was a sign that spring weather had started. The Ptarmigan seemed to have increased too: we often saw them now in small parties and Arpika had shot three only the day before.

With light sledges we soon reached the Big Flag, though we had some difficulty on Bugbear Bank. Wager's team refused to pull when half-way up, and the sledge started slipping backwards. It went faster and faster for about 20 or 30 yards, dragging the dogs in a howling turmoil. Then, luckily, it overturned and stopped. I had tried the experiment of lashing Eskimo handle-bars to my Nansen sledge and found it a vast improvement as I

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could push as hard as I liked on them, and use them to hold on to with one hand as I ski-ed along beside the sledge. Also they were very useful for hanging things on.

As we had only two sledges the party was limited to three: Stephenson, Wager and myself. It is an advantage to have an extra man who can go ahead of the sledges, but it means the loads will be very heavy, and we feared that if the going was bad the sledges would break. We were to go as fast as we could to the depôt at Kangerdlugsuak Fjord, mapping the inner belt of coastal mountains on the way. It might be difficult, or even impossible, to get down the glacier to the head of the fjord. When we were at Kangerdlugsuak in the summer we had not had time to prospect it and it looked to be very much crevassed. But we hoped that up till June the snow-bridges would be safe. We brought with us a small hard-runner sledge for getting the loads from the depôt up on to the Ice Cap. We hoped to shoot a few bears and seals at Kangerdlugsuak and then to go up to the New Mountains to make at any rate a rough map of them. Mount Forel might be climbed on the way out or on the return journey.

Our loads were about 800 lb. per sledge, but luckily the going was quite good at first and the dogs were able to pull them. At the Big Flag it was — 13° F. when we started off, going due north, keeping just as near the mountains as we could without meeting crevasses. The mountain scenery these first few days was marvellous. To the west the Ice Cap stretched its white undulations to the horizon, but on the east a whole range of jagged mountains led up to the sheer wall of Forel in front of us. We were crossing the drifts at right angles, so had little trouble from the sledges upsetting. But the drifts were in parallel waves a sledge-length from summit to summit, and the sledges often got stuck in the hollows when the nose dived into the soft snow below the next drift. Then all three men would be needed to move it again. We had the consolation of knowing that the sun was rapidly rising in the heavens, so that each day would be warmer and longer than the last. This fact alone makes a

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spring journey so much more cheerful than a winter one. Often, though, there would be a strong wind blowing, which at -23° F. compelled us to wear all our winter clothes.

We had made about 11 miles per day for four days, when we found ourselves approaching a huge sag in the surface of the Ice Cap. This hollow drained into Sermilik Fjord. It would have cost us several days to go round it, and as it appeared to be of gentle gradient we decided at any rate to have a closer look at it. If we could get across we could be at the foot of Forel in three days.

On March 17th the wind was blowing the snow along, but it was just possible to travel. The drifts were deeper and we had to relay the sledges on one at a time. Suddenly Wager noticed that his dogs were worried about something, and looking round he saw on the left the gaping hole of an open crevasse. We were just on the lip of this big hollow and had been expecting crevasses for some time.

Wager and Stephenson then roped up, while I stayed to keep an eye on the dogs. I watched them go out of sight behind a corrugation of the surface, and started to read *Moby Dick*, while the dogs all fell asleep at once. After about ten minutes, thinking I heard a sound, I looked up and saw Stephenson running back alone. Running on snow-shoes is always a good thing to watch: encouraged by the success of your first few steps you start to go faster, and then the tip of your snow-shoe digs into the snow, invariably making you fall flat on your face.

Stephenson was in a great hurry and fell every few yards. This could mean only one thing—that Wager had gone down a crevasse. I collected another rope and went to meet Stephenson. Apparently they had passed two crevasses about 30 feet wide, which were firmly bridged with a mass of snow. Wager was ahead carefully testing the snow every few steps with his ice-axe. Suddenly, in a fraction of a second, he had disappeared from view and a black hole with the rope coming out of it was all that remained. Stephenson was pulled over and dragged forward for a few yards

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before he could stop himself with his ice-axe. He could just hear Wager shout that he could wait while Stephenson went for me. It is impossible for one man to pull another out of a crevasse, and as the rope digs into the lip of the crevasse it is often difficult for two or even three to manage it.

The ice-axe to which Wager's rope was belayed had tilted dangerously forward but still held. We let down another rope, and while Wager hauled on this we pulled for all we were worth on the rope which was tied to his waist. The rope did not fray against the edge of the crevasse and soon Wager lay on the snow beside us. He was very much out of breath and somewhat shaken by his experience, but otherwise none the worse. He had fallen among a shower of debris, dropping his ice-axe as he went, and found that he was hanging about 20 feet down a crevasse 5 feet in width, whose blue and purple shadows ran as far as he could see in each direction. An occasional paleness in the covering snow-crust showed where the bridge was thin. Ice and snow crystals of infinite beauty had formed on the ice in a variety of shapes and sizes. Just near him he saw a flake of ice projecting from one wall and almost reaching the other. He tried to kick a foothold in this with the butt-end of his snow-shoe, but the flake reverberated and shook so much that he desisted, expecting it to fall. Finally he took one snow-shoe off, wedged it behind the flake, and managed to crawl on to the flake and sit astride it. Creakings and groanings running right along the crevasse made him fear for the safety of his seat, but though it shook tremulously it held firm. After we had got him out I roped up and went down for the snow-shoe he had left behind the flake.

As it was getting dark by that time we decided to camp, and soon it began to blow. For five days and six nights it continued to blow and it was not till March 23rd that we could leave the camp. As the temperature varied from -10° F. to -31° F., it was impossible to leave the tent except to feed the dogs. We amused ourselves by reading, and singing songs and hymns.

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As there were three of us for two tents one man had to do ten days alone, but he could usually take advantage of a lull to crawl across to the other tent for supper and a little community singing. We realized already that we could not reach Kangerdlugsuak with the heavy loads and decided to dump something.

On the 23rd we dug out the drifts, which reached almost to the tops of the tents and completely covered the sledges. The dogs were in a pitiful state, some of them being buried except for a small breathing-hole they had kept open. One was so sick that it had to be killed. We now had to retreat and to go round the head of this crevassed valley. The surface had been hardened by the wind, but the drifts were terrible. It clouded over soon after we started and small snow-crystals filled the air. These crystals were extremely beautiful and seemed to be a thousand different shapes and designs. I relieved Stephenson in the single tent on this day, not liking the prospect of solitary confinement but glad to have a chance to dry out my clothes and sleeping-bag.

It snowed all night and till midday on the 24th, when it started to blow again. We could not attempt to travel. It blew all next day too. In eight days we had done 3 miles in the opposite direction to our destination. On March 26th, 27th and 28th we made a few miles west and then north away from the mountains, which looked a forbidding purple colour against an indigo sky. The valleys among the mountains were full of heavy cottonwool-like cloud out of which the steep peaks rose as if from a lake of salt.

On March 29th we were stopped again by heavy snow which, varied by terrific gales, kept us in our tents till April 4th. Six days and seven nights in a tent about 5 feet square. The new snow piled up around the tent till it was nearly a yard deep. Then the wind whisked it away, heaping it up in enormous drifts. During these days the temperature varied from $+10^{\circ}$ F. to -25° F. Eventually we realized not only that we would not reach Kangerdlugsuak and the New Mountains, but that Forel itself

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would have to wait for another time. Kangerdlugsuak was still 260 miles away and we had but a fortnight's dog food left.

Luckily we had a fairly good library on this journey, as we had expected to be away from the Base for at least three months. We had a complete Shakespeare; *The Oxford Book of English Verse*; Palgrave, *The Golden Treasury of English Verse*; Shaw, *Three Pleasant Plays*; Thackeray, *Vanity Fair*; Margaret Kennedy, *The Constant Nymph*; Melville, *Moby Dick*; Stevenson, *Catriona* and *The Wrecker*; Buchan, *John Burnet of Barnes*; the Apocrypha; a hymn book and a community song book, as well as three solid Bird Books of mine. On a sledging-journey we found that mere ephemeral literature was unsatisfying. One wanted something exciting but well written, and not too short. I think *The Three Musketeers* was the most popular book on the Ice Cap.

On April 4th, after digging out our belongings for several hours, we reluctantly turned south, intending to pick up more supplies at the Big Flag and set off again for Kangerdlugsuak before the glacier should become impassable. On the way home it was so warm that often we stripped to the waist or wore a vest only. Covering about 15 miles each travelling day we reached the Base on April 14th, being forced to lie up for two days on the way. In three weeks we had only twice seen the mountains we were supposed to be mapping. The Ice Cap weather had defeated us again.

Soon after we had left the Base, Watkins set off to map the mouth of our own fjord, and then to meet Lemon so that they could survey Sermilik Fjord. But so much pack-ice was frozen firmly on to the new fjord-ice that it was terribly difficult to get the sledge along at all, especially as there were several feet of snow filling up the hollows. A runner broke off his sledge and he had to return. On March 14th they set off together for Sermilik, and that night reached the Settlement on the west of the fjord. They slept in a special tent which fitted on to an upturned sledge: it was very small and there was only just room

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to sit up. The next few days were spent crossing Sermilik and going from Settlement to Settlement mapping. Watkins hunted seals with a shooting-screen and got enough for themselves and the dogs. They went about 20 miles up the fjord and then were confined to the tent for three days by a blizzard which broke up all the ice towards the mouth of Sermilik: the discomfort of spending three days under an upturned sledge must have been extreme. Finally, while Lemon continued the mapping, Watkins sledged on to Angmagssalik to see Hampton who was still busily repairing aeroplanes. This was a very exciting run over steep mountains and frozen lakes. Watkins went over alone one dull evening and was just able to keep his direction by a mountain-top which occasionally appeared through the gathering darkness. He reached Angmagssalik on March 22nd and next day set off to return to the Base with Hampton, who had been working solidly at his aeroplanes for two and a half months. On the way over, Hampton's sledge was about a hundred yards behind when his dogs incontinently tried to cut a corner and pulled the sledge and Hampton over a sheer drop of 15 feet on to the snow below. Luckily he was not hurt nor was the sledge broken. They joined Lemon at the Settlement and decided to return across Sermilik next day. However, in the morning there was a strong wind from the south, whirling the new snow about and making it difficult to see more than 10 yards. The natives said that in a few hours it would be blowing a gale and all the ice would be carried out. As Watkins and Hampton did not want to spend the rest of the spring on the far side of Sermilik, they started to cross and for four hours fought their way against the wind, eventually reaching the other side. The natives were quite right: it blew furiously all night and next day all the ice had gone.

On March 26th Watkins and Cozens flew in to see if they could find the Ice Cap Station or see anything of Scott's party, who should be fairly near the Station by then. After they had gone some way Watkins noticed through the window in the

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cock-pit floor a stream of oil pouring out of the engine, and they had to return at once. Actually it was only because the crank-case breather was blocked with ice, and was nothing at all serious, though it prevented them reaching the Station.

About this time Bingham and Rymill blew a hole with dynamite through the ice in the lakes near our Base and started to fish for sea-trout. The ice was about 4 feet thick. They had cut a hole earlier with picks and ice-chisels, but that had taken them a whole morning. They fished with a mixture of flour and seal-blood, or the eye of a fish on a small hook. The larger sea-trout were of two or three pounds weight but usually smaller ones were caught. They were very beautiful fish with crimson and orange bellies and white edges to their fins. The flesh was pink and of a very delicate flavour. Bingham and Rymill went off to establish a fishing-camp on a lake near the Settlement, and returned every few days with twenty or thirty fine fish.

It was snowing and raining again at the end of the month, and several inches of water lay on the sea-ice making travel rather unpleasant, and hiding the holes and weak places in the ice. In the morning there was often a treacherous crust of new ice on top of the surface water. We had expected the gales to finish in March, but an unpleasant April fool came in the shape of a gale which seemed at the time to surpass all previous ones. At Angmagssalik they said it was the worst they had had for ten years. One aeroplane was anchored on the ice outside the hangar, but it survived the storm, though Lemon's kayak blew off the hangar-roof and slightly injured one wing. This gale broke up all the winter ice and Watkins had to give up any hope of being able to send a sledge party to survey the coast south of the Base. Hampton had returned to Angmagssalik at the end of March to finish work on the other aeroplane, but as Sermilik was no longer frozen over and yet was too full of pack-ice to allow umiaks or kayaks to cross, we could get no spare parts over to him.

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With the object of having a box of spares on the near side of Sermilik ready to be rowed over when possible, Watkins and Rymill sledged over to the Settlement there, left the box and got back to the Base in the same day. In sixteen hours of continuous travel they covered about 60 miles of extremely rough country, crossing chains of lakes, arms of the Ice Cap and steep mountain-ranges in the course of the journey.

In the middle of April there were 2 feet of wet snow everywhere and there was little to be done till Scott's party returned. We spent our time digging out stores, fishing for sharks and sea-trout, and making plans for future journeys. When Scott should return, Rymill and I were to make a dash for Kangerdlugsuak, travelling light with small loads and large dog-teams. But on April 18th all our calculations were upset by an event which filled us with dismay. On that day Scott's party returned, having seen no sign whatsoever of the Ice Cap Station.

It will be remembered that it was on March 9th that Scott's party, after two false starts, had finally got away from the Base. They picked up their dump and found the Big Flag without difficulty. They had cut their loads down to a minimum in consideration of the rough going, taking only two ration boxes for Riley at the Station, four for the journey up and down, and four and a half weeks' dog food, together with a minimum of paraffin. Being delayed by bad going, and occasional gales and snowstorms, it was not till March 26th that they reached the vicinity of the Station. They had approached from the southwest, cutting the line of flags obliquely, so that had any been visible they would have seen them. For finding their latitude they had both a theodolite and a sextant, but since they had no wireless time-signal set they could not check their watches and discover their longitude. To save weight they had not brought a time-signal set. Steering by compass and calculating distance by sledge-wheel they could check both by observations for latitude since they were travelling approximately north. Had they been going east and west their latitude would not have been changed

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and this method would have been useless. They aimed to hit the Ice Cap Station, latitude about 16 miles east of the Station, then to travel west along the latitude, checking it by meridian altitude observations on the sun each day.

For almost three weeks Scott's party were in the vicinity of the Ice Cap Station, but so appalling was the weather that they were only able to search on a few of these days. For days together they were confined to their tents and the temperature varied from -15° to -46° F. They had little paraffin to burn during the day and there was often 40° of frost in the tents. Sometimes they would dig out the sledge and the tent, and by the time they were ready to start it would be blowing again, making it impossible to travel and reducing the visibility to a few feet. Naturally, too, under these conditions it was difficult to get accurate observations with the instruments. Gloves had to be worn, otherwise the metal could not be touched. Whenever they put their eyes to the instrument their breath frosted up the glass and they had to start again. Yet, even if their results were untrustworthy, they must have been within a few miles of the station by dead-reckoning, and if it were visible from any distance at all they ought to have seen it.

Scott could have stayed out for several more weeks. He could finish the dog food, then kill the weaker dogs and feed them to the others till eventually all the dogs were gone: then he could manhaul back. But if he were still unsuccessful in the search it would then be too late for another party to come up, and also he thought there would be no dogs left for such a journey since the other teams should be on their way to Kangerdlugsuak. On the other hand he might return, as he did, before the dogs weakened, leaving plenty of time for another journey to start before Courtauld's food supply ran out.

By April 10th they had covered 70 or 80 miles in travelling first along what they thought was the correct latitude, then for 20 miles just a mile north of this latitude, and another 20 miles back a mile south of it. They stopped every few hundred yards

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and standing on the sledges gazed in every direction. Not a sign of the Station did they see, and having only four days' dog food left they set off homewards. Travelling about 20 miles per day they reached the Base on April 18th, after the coldest and most disappointing journey of the whole expedition.

CHAPTER IX

The Relief of Courtauld

NATURALLY great consternation was caused by the unsuccessful return of the first relief party. Either they had not been near the Station, or the place was so drifted over with snow that it was invisible at any distance. Admittedly the conditions under which Scott's position-finding observations had been taken were severe in the extreme, but he must have been somewhere near the Station on his dead-reckoning alone. It looked then as if the Station was drifted up; possibly, too, something serious had happened to Courtauld. When we left him at the beginning of December his feet were rather frost-bitten, but otherwise he was in excellent health. With plenty of lemon-juice he could hardly get scurvy and he had food until the end of April at least. It was possible that he might have been suffocated by fumes from the primus or by drifting snow. Or he might have walked a short distance from the Station, to read the instruments or to tend the flags, and been unable to find it again owing to a sudden blizzard; but this was unlikely.

Watkins felt that he must let Courtauld's family know the result of the first relief expedition, although he was loath to do so as there was simply nothing they could do. As the relief party had not seen the Station from the ground it was unlikely that an aeroplane would see it from above. Our Moths had been repeatedly unsuccessful in finding objects on the Ice Cap because of the maze of hard black shadows thrown by the drifts.

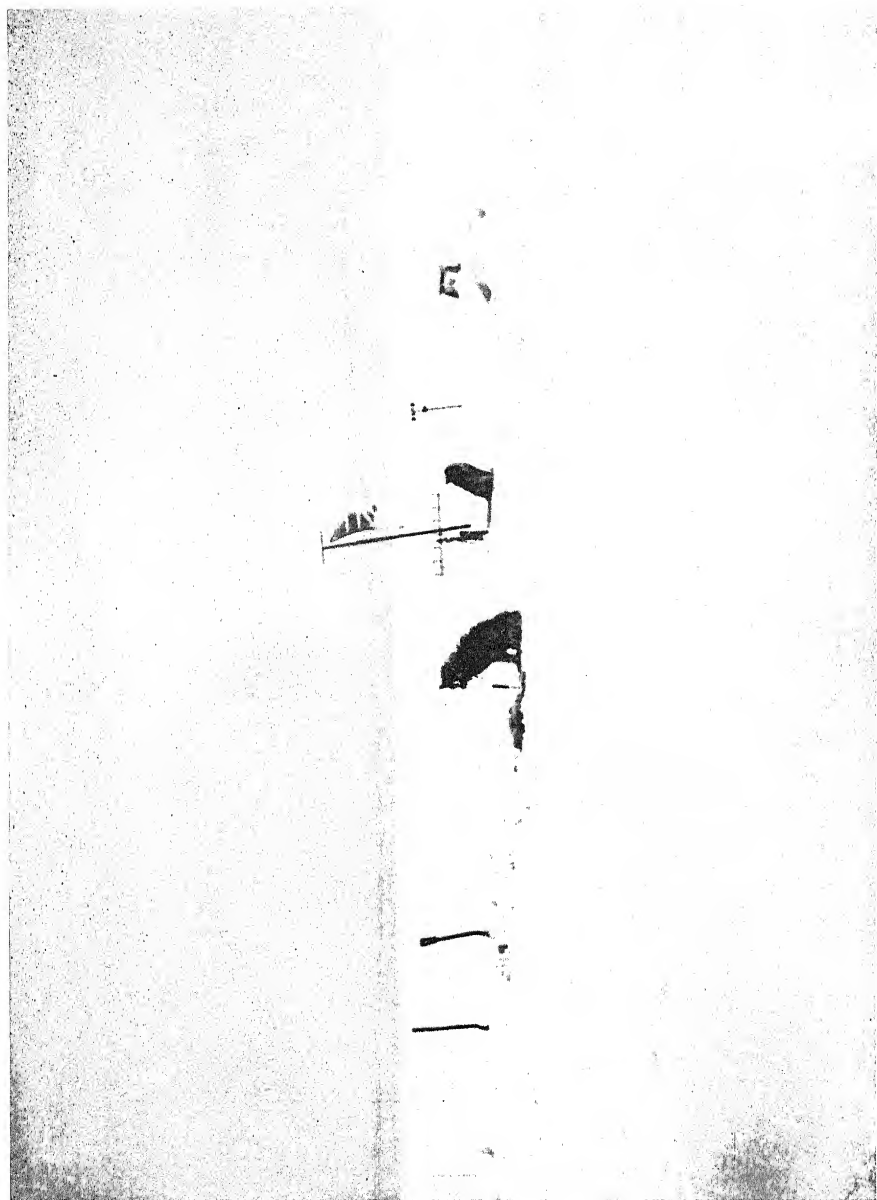
The day Scott's party returned Watkins sent a message home saying that owing to the severe conditions Scott might have passed within a quarter of a mile of the Station and not seen it; that

Courtauld had plenty of provisions and that he, Watkins, with Rymill and me, was starting out at once with sledging rations for five weeks. He finished the message with the words: "There is always the possibility that Courtauld is not alive, or unwell, in which case Station is probably completely covered."

Before leaving the Base Watkins left Lemon in charge. While still in England he had often stressed the point that those on the spot can most fairly judge any emergency, and that no search parties should be sent out unless expressly asked for by the leader himself. But fearing that anything of this sort might be thought necessary, Lemon was told to stop any search parties at all costs and to say that everything possible was being done by us.

As it happened the second relief party was not able to get away for three days owing to bad visibility. We could have travelled, but it was essential to find the Big Flag Depôt as our supplies for the journey were already there. We left the Base on April 21st with a sledging ration for five weeks. We had already proved that these rations could be made to last ten to twelve weeks if necessary, and we could then eat the dogs if compelled to stay out even longer, which was unlikely. By May 3rd we were within a few miles of the Ice Cap Station. At this time of the year the weather was ideal and although our loads were fairly heavy we averaged 10 miles per day. We steered by compass and as usual checked the distance by sledge-wheel. We had clear skies and little wind. The heat of the sun was terrific. Our faces peeled and our lips became open sores: it was far more painful than the minor frost-bite we had received in the winter. After a few days like this the wind started to blow with a temperature of -24° Fahr., making our faces more painful than any imaginable torture could have done. It was like pouring iodine into a huge open wound.

Every few days we took a meridian altitude observation, each one putting us within a few yards of our true course. On the last day of April it snowed and the temperature rose at midday to $+33^{\circ}$ Fahr. A longitude and latitude observation put us only a few miles from the Station. Unfortunately the next day was dull,



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and we could do no more than go on till we thought we were at any rate within 2 or 3 miles of our objective.

On May 4th there was a gale and drifting snow which made it impossible either to search or to take any observations. In the evening it cleared up and we went out on skis in different directions to see if we could see any sign of the Station. There were many snow-drifts of extraordinary size whose black shadows were visible for almost a mile, and often we went racing towards one of these, thinking it was the Station. Watkins and I got back about 10 p.m., having seen nothing. After an hour there was still no sign of Rymill and we thought he must have found the Station. However, at midnight, just as we were getting dressed again to follow his ski-track and see what he had found, he returned. With characteristic thoroughness he had quartered the ground for about 20 miles, but he, too, had found nothing.

May 5th dawned a wonderful day and we took observations for the latitude and longitude. With a theodolite and a wireless time-signal set it is possible to find your position within a few hundred yards. Our calculations proved us to be about a mile north-west of the Station. With considerable excitement we put on our skis and set off in the direction where we knew the Ice Cap Station to be. Each of us took a dog on a lead, hoping that he would show some excitement when he scented any sign of human beings. We separated, covering between us about half a mile of ground.

The snow was gritty here, almost like sand. When there is plenty of fresh snow the wind forms it into drifts. But once there is no more loose snow it starts to eat into the old drifts and, gradually eroding them, forms new drifts of sandy consistency.

On reaching the summit of a long undulation we made out a black speck in the distance. It was a flag. Could it be the Union Jack of the Ice Cap Station? We went racing down towards it at full speed and as we approached saw a large drift on each side of the flag. It was indeed the Station. But as we got near we began to have certain misgivings. The whole place had a most extraordinary air of desolation. The large Union Jack we had last seen in

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December was now a mere fraction of its former size. Only the tops of the various survey instruments and the handle of a spade projected through the vast snow-drift, which submerged the whole tent with its snow-houses and surrounding wall. Was it possible that a man could be alive there?

As we ski-ed up this gently-sloping drift a ray of hope appeared when we saw the ventilator of the tent just sticking through the snow. A moment later Watkins knelt down and shouted down the pipe. Imagine our joy and relief when an answering shout came faintly from the depths of the snow. The voice was tremulous, but it was the voice of a normal man.

After taking a photograph of the Station from each point of the compass we started to dig through the snow to get at the tent. Up at the top, near the ventilator, it was only a foot or two thick, and having cut through the two layers of canvas with a sheath knife we were soon shaking Courtauld by the hand.

He looked as if he had stepped straight from Ober-Ammergau. His hair and beard were unkempt and long, and his face stained with smoke and grime. Though his cheeks were hollow he did not look really ill. We had much to talk about. He had always had a slight fear that the Base might have been burnt down or that an earlier search party might have gone through a crevasse or met with some other disaster, for he had already assumed that if a party had set out in March as arranged they had been driven back by the gales which he used to hear roaring down the ventilator. We made him put on a pair of the darkest snow-glasses to protect his eyes from the unaccustomed glare of the sun.

The inside of the tent was different from when I had seen it last. It was diminished in size from 10 feet in diameter to about 8. It was in a state of great chaos and everything was covered with a delicate tracing of ice-crystals. Courtauld was in his sleeping-bag with the remains of his food supplies spread around him. We helped him out through the hole in the roof and were surprised to find that he could walk.

After taking the valuable meteorological records and some of

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the instruments we abandoned the Station for good and returned to our camp. The lowest temperature recorded by the minimum thermometer outside was -64° Fahr., 96° of frost; not nearly so cold as we had expected.

Next day we set off to the Base, intending to travel as fast as possible in order to wireless the good news back to Europe as soon as we could. But we had to take back with us about 400 lb. of dog food, which was needed for later journeys. Courtauld sat on my sledge while I went ahead on skis. I was amazed to find the tops of some of the flags just sticking out of the snow. We did 18 miles before stopping to camp. We expected soon to see one of our Moths, since Hampton was going to fly in as soon as he had finished repairing it, and this was an ideal day. About midday a loud roaring noise broke the silence of the Ice Cap, and to our amazement, not one of our Moths but a great silver monoplane appeared from behind us and swooped low over the sledges. Watkins recognized it as a Junkers monoplane.

It dropped a lot of food, which actually we did not need, though we were very glad of the chocolate from the ration box and some ptarmigan which was included. Letters from people at the Base were not enough to elucidate the problem concerning the origin of this machine, and Watkins was anxious to return home as quickly as possible. A note was tied between two skis, but the Junkers flew over it without picking it up. Then, flashing in the sunlight, the monoplane turned and flew back towards the coast.

For the next few days we averaged 25 miles per day. With the extra dog food our loads were too heavy to allow us to ride, and the intolerable dullness of ski-ing ahead of the sledges is for me the most unhappy memory of the whole expedition. One's skis would shoot off sideways on the drifts and the points stick under the larger ridges. The horizon was a quivering nightmare of fantastic mirages. Purple bridges would be formed, portentous silhouettes of imaginary cities, and mountain-ranges where no land was. Mile after mile we would go with nothing to break the intolerable monotony of the blazing sun above and the dazzling

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white snow below. Our faces became covered with blisters, our lips cracked and our eyes ached with the glare.

On May 9th we slept for only two hours and after 26 miles reached the Big Flag. Our direction was right within a hundred yards, although we had steered by compass since leaving the Station. Having dumped the dog food, we sat on our sledges and started downhill for the Base. I slept most of the way, only waking up when I fell off my sledge. As we came down off the foot of the glacier the wheatears and snow buntings were singing and the snow had melted in patches off the southern hillsides. We reached the Base at 5 a.m., having travelled for 41 miles on end. There we met the Swedish pilot of the Junkers plane, Captain Ahrenberg, with his mechanic and his wireless operator, and heard the sequence of events at the Base.

The first that had been heard of relief operations from home was a wire on April 27th from Captain Rayner, inquiring about landing conditions at the Base. In reply to a query of his he had been told that Watkins did not consider the situation desperate, and that "everything that can be done is being done." Then a wire came saying that a large 'plane would leave Sweden that day for Iceland "to assist in search." On April 29th Lemon heard that Captain Ahrenberg had left Malmo for Bergen and should reach the Base in two or three days. At the same time Hampton wirelessly from Angmagssalik that our own Moth was nearly ready and would arrive on May 2nd. It was a busy time for Lemon and he worked night and day charging the batteries and sending and receiving messages.

On May 2nd Hampton flew over to the Base in the morning, and D'Aeth, with Riley as passenger, set off for the Ice Cap Station. He flew in for 70 miles, but meeting low cloud and fog had to return and wait for better conditions. On the same day Captain Ahrenberg left Reykjavik at 11.40 a.m. They lit a fire at the Base to guide him, but at 7 p.m. heard that he had been forced back by fog.

On Sunday, May 3rd, after the morning service, a wireless



(a)

RYMILL, WATKINS AND COURTAULD READING AHRENBERG'S MESSAGE



(b)

THE REPLY TIED BETWEEN SKIS

THE RELIEF OF COURTAULD

message announced that Ahrenberg had left Reykjavik again at 8.40 a.m. It was foggy at the Base and they had great fears for his safety. They lit a fire of oil and petrol, hearing that he was over the pack. They knew that he had insufficient petrol to return to Iceland. The clouds were dropping down and fog rolled into the fjord. Then it started to snow. At 1.20 there was no sign of him, and it was impossible to see across the fjord. At 1.25 he flew over Angmagssalik, went westward to look for our fjord, but returned again, seeing the fog, and landed at Angmagssalik at 1.35. There was only one small piece of ice-free open water at Angmagssalik, and Ahrenberg landed there on floats. Ten minutes later the fog had covered it and he would not have been able to return in safety. Cozens, who was at Angmagssalik at the time, told us that after landing he charged the ice at about 10 miles per hour and when his huge floats touched the edge of the ice he opened up his throttle and climbed out of the water.

It was still foggy next day while Ahrenberg, helped by the natives, substituted skis for his floats. The following day he flew over to the Base. In the afternoon, taking D'Aeth on board, Ahrenberg flew up into the Ice Cap and was quite surprised to see no sign of the Station. His machine could only just clear the summit of the Ice Cap and had he landed he would have been unable to take off again.

On May 7th he flew in a second time and at 11 a.m. Lemon received a message to say that the Watkins party had been seen returning, and that Courtauld was walking with them. Telegrams were at once dispatched to Courtauld's family and to *The Times*. Captain Ahrenberg had been commissioned privately, not because our judgment had been doubted, but because those at home had been anxious to do anything that could possibly help us.

The Swedes spent another five days at the Base, so were still there when we returned. We found them most delightful men and were more than thankful that no harm had befallen them after the wonderful flight they had achieved.

CHAPTER X

Five Months at the Ice Cap Station

BY AUGUST COURTAULD

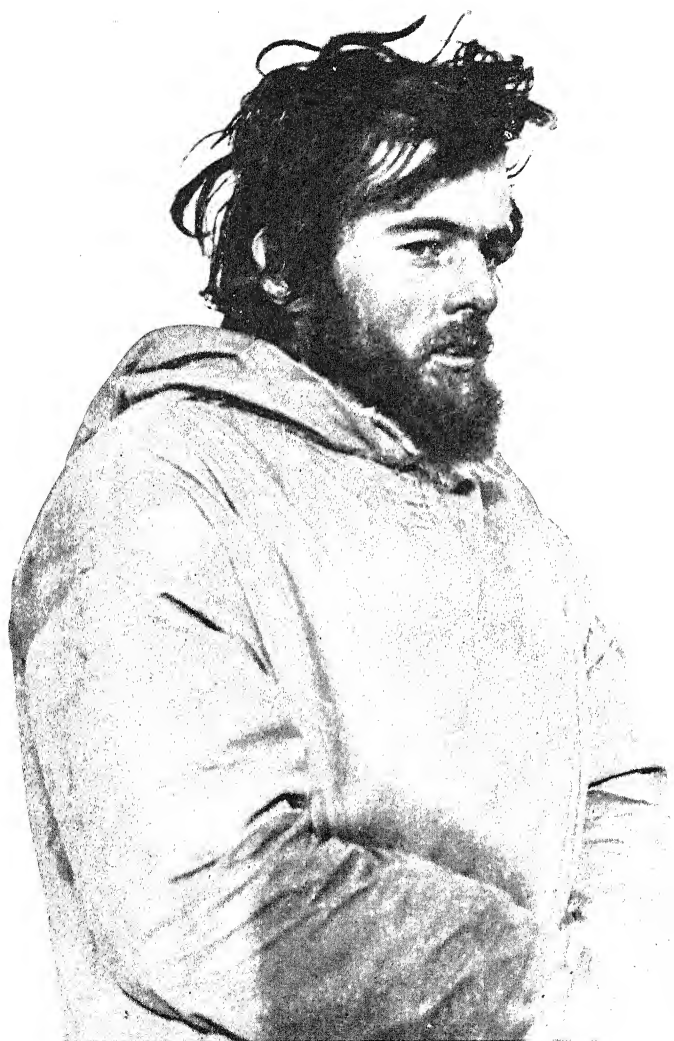
MORE than a year has passed since the incidents occurred which are the subject of this chapter. During that time much of the detail has faded from my memory, the impressions have become blurred, and the ideas which then formed themselves in my mind are now forgotten. Yet it may be that a few notes on that time spent on the Greenland Ice Cap will be of some use to travellers who, in the future, may be faced with a similar problem. If I, by these notes, can do something to dispel the strange ideas of danger and risk in leaving a man in such a situation, I shall feel justified. There are many men, trappers and the like, who live by themselves for most of the year. An accident is very rare among these men, nor are their minds usually deranged.

The following is a bare outline, from memory, and from an irregular diary, of my five months alone at the Ice Cap Station.

The total provisions at the Station at this time were, including the supplies brought by our party:

- 6 ration boxes
- 26 gallons paraffin
- 2 bottles concentrated lemon juice
- 1 bottle cod-liver oil.

Each ration box was designed to last one man a fortnight, but in fact we found that it would last comfortably for twenty-four days. The consumption of fuel at the Station had previously been



COURTAULD IMMEDIATELY ON HIS RETURN TO THE BASE

FIVE MONTHS AT THE ICE CAP STATION

at the rate of two gallons a week. This, then, was sufficient food for one man for five months, but if two men were to remain, they would have to be relieved by the middle of February.

My first week or two at the Station were fully occupied. Clothes and sleeping-bag had to be dried, the space inside the wall had to be dug free of snow, and the stores got into the house. Six times a day I dressed up in full kit, and sallied forth to read the instruments and inspect the weather. This was an absorbing interest in itself. The sudden changes from days of still twilight and nights of dead silence, with their waving curtain of aurora, to those in which day and night were obliterated in one sweeping roar of blizzard, showed me Nature in her most sublime and her most terrible moods.

For the first few weeks I was also kept busy digging myself out through the tunnel to get to the instruments. This tunnel would get completely filled after half an hour's blizzard. Gradually the drift gained on the digging, and soon I saw that I could not hope to keep the tunnel open if the gales continued in frequency and ferocity. The difficulty was that digging from the inside only piled up the debris further back in the tunnel, so that very soon the whole passage-way became filled, and only a small crawling space between the debris and the roof could be kept clear.

About Christmas I discovered that some four gallons of paraffin had leaked away, so I had to do without the primus stove except for cooking. This was no great hardship so long as there was enough for the Aladdin lamp, which provided a very good heat, though of course it had been very pleasant to have the primus as well.

On January 4th a very severe gale finally closed the entrance, and the tunnel was too full to dig any more from the inside. A hole was therefore made in the roof of one of the small snow-houses which were connected with the main tent by underground passages. This was above the level of any obstruction, so it did not get drifted up, since the drift blew past it. For a door I made use of a ration box, packed round with snow. This was a much more satisfactory

entrance. During January the main house got drifted up, and frequently ominous cracks and groans made themselves heard, but, although the walls bulged inwards a lot, nothing collapsed.

By the end of January, as no aeroplane had turned up, I assumed the Moths could not get up to the Station, and became resigned to waiting for the spring. I had considerable difficulty in getting the spare paraffin and food into the house. There had been no room for these until the first supply had become exhausted, and when I wanted them I could not find them. After protracted exploratory diggings lasting several weeks they were at length found 6 feet under the snow, and brought in. The small snow-houses gradually caved inwards from the weight of the snow on the top of them, but they never actually collapsed, which was a good thing as they were my only means of getting out. The partial collapse of one of them buried one of the ration boxes. It took a long time to extricate it, since all the snow had to be cut or chipped with a knife, and emptied outside with a biscuit-tin.

On the night of March 19th a gale got up from an unexpected direction. A small hole was blown in the packing round the box which closed my bolt-hole, and very soon there was a jet of fine drift blowing in as if from a high-pressure hose. By the morning the small snow-house was completely filled, and exit through it impossible. Accordingly I cut a hole in the roof of the other snow-house, and after excavating a shaft about 5 feet in length the open air was reached. The difficulty was then to close this exit against the next gale. The shaft was too long to reach up from inside, and to allow me to pack snow round a box covering the hole, as had been done with the previous exit, so the shaft was shortened by digging a hollow from outside. As I feared, a gale immediately started blowing, and drifted up the hollow, thus putting a weight on the closing box, more than it was possible to move. This occurred on March 22nd, and put an end to further sallies outside, and therefore to the meteorological observations.

FIVE MONTHS AT THE ICE CAP STATION

There were several aspects of this situation which occurred to me when I realized that I should no longer be able to get out. I will not deny that at first I was anxious about the safety factor. There were three things I was afraid of:

(1) That the air would become vitiated by reason of there being no possible entry for fresh air, and only an exit in the shape of a 2-inch ventilator in the roof of the tent-house.

(2) That the accumulating drift of snow on this roof would crush the tent, now that I could no longer clear it away.

(3) That since I could no longer keep a look out, the relief party might miss the Station.

The first anxiety was soon dispelled by the air continuing perfectly fresh. This may have been due to a down current through the ventilator, as well as an up current, or more probably to air coming in through the snow walls of the tunnel and side houses. The second anxiety was already partly dispelled by the fact that the snow-level had almost reached the top of the tent, and it had stood the strain: though not without many uncanny noises and bulgings inwards. It was, therefore, unlikely that much more would accumulate, since once it was a level surface the drift would blow past. For the third I trusted to the Union Jack on its pole, and the navigation of the relief party. I did not think that the route flags, which at half-mile intervals marked the trail to the Base, would be snowed under completely (as in fact they were), although it was always a great anxiety, when one heard the wind roaring overhead, that a party might have got into difficulties through starting too early. There was, therefore, nothing to worry about as far as personal safety was concerned. It was clearly futile to get anxious, when by no possible endeavour on my part could I make any difference to the course of events.

A more unsatisfactory matter was the cessation of the weather record. A man dislikes changing his habits, and this business of the weather had become a very absorbing habit. So long as one

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could keep up the observations, one felt that, however vague and academic, some useful purpose was being served. But now that I was prevented from doing my job I naturally felt that I was wasting time, and throwing away an opportunity not likely to occur again. These records were the only results the Station would have to show, and if they were not kept, all the enormous effort of getting the supplies and men up there would be wasted. However, all I could do was to keep a record of wind-force, estimated from the noise outside, and of pressure readings from the barograph.

The food situation was also becoming interesting about this time. When I first took over the Station I had, of course, to decide on the scale of rations of food and fuel I was going to keep to, and for this purpose it was necessary to estimate a date of relief. One way would be to choose the latest possible date, which would allow a very small ration indeed, with the probability of a large amount of the supplies being left over. This would have been the safest course, but for various reasons I did not take it. In the first place I did not like rationing. I prefer, in fact, to eat my cake rather than have it. "Carpe Diem" was a tag which served as an excuse whenever I felt hungry. Another reason was that I needed a large amount of fuel to begin with for drying clothes and for reading. I therefore assumed March 15th as the date of relief, and scaled my rations to last till then, leaving a small amount of the less palatable necessities, and a bare allowance of fuel for cooking after that.

It was, therefore, all according to plan when stores began to run out. The paraffin supply especially got short, owing to leakage. This was very tiresome, since I had to spend more and more time in the dark and the house got considerably colder without the lamp to give heat. The food problem solved itself, since one's appetite becomes very small if one takes no exercise, and an allowance of half a pound a day proved ample towards the latter part of my stay.

One very pleasant feature of this forced inactivity was being



WATKINS CUTTING THROUGH THE TENT TO REACH COURTAULD

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able to hear a blizzard tearing overhead, and knowing that I would not have to dress up and go out into it, with the sequel of undressing again and thawing myself out. Occasionally I used to crawl through the tunnel into the sealed snow-house and do some excavation in the roof. This was a very slow job as it had to be done with a pocket-knife on snow which had turned to ice and taken on the consistency of concrete. I did this as a precaution in case no relief arrived before the food ran out, so that I should be able to get out, and after a week or two of gradually increasing exercise, walk back to the Base on a compass course. Actually it would have taken several weeks to cut my way out, since I could only work for an hour or so at a time. This tunnel-crawling was not an easy matter, as the snow used to collect on the floor of the tunnel and get compressed by the pressure of crawling through it, making it smaller and smaller. Many times I got stuck for some considerable time in this tunnel, but always managed to wriggle one way or another eventually.

By the middle of April there was no more light, luxuries had run out, and the comfort of the house was much reduced. Tobacco was completely exhausted, so tea was used as a substitute. Food consisted of a little oatmeal, just warmed up for breakfast, and thereafter, uncooked pemmican, biscuit and margarine. The most unpleasant part was the frozen condensed moisture which covered the whole inside of the tent, and, hanging down in long icicles from the roof, used to drop off in one's face. It also condensed inside my sleeping-bag, and so froze up any part of it that I was not in contact with. I tried various substitutes for light: paper, string, ski-wax, etc. None of them was satisfactory, though a lamp made of string in a tin of ski-wax was the best, and would last a few minutes if carefully tended.

The only external incident of interest which happened during the time I was there was the occurrence of a curious and very terrifying phenomenon, of which I have been unable to find an explanation. It was a sound beginning as a distant rushing noise, which rose quickly in a crescendo to end in a crash, rather as if an avalanche

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had buried the house. It happened twice, once in February and once in April.

The shortage of fuel made drinking a difficulty, but I found that, though laborious, sucked snow was perfectly satisfactory.

I am often asked what I did in my spare time, but there is really not very much to say about it. I had no gramophone, and I am glad to say, since we had abandoned it on the way, no wireless. For the first month or so I was very averse to the least noise. The complete silence all round seemed to urge one to keep in tune with it by being silent oneself. After a time I got over this, and used to get great satisfaction out of a sort of singing. All the time I was not sleeping, and while the light lasted, I used to read, or draw plans of boats, dinners, meteorological instruments and other things. My own library consisted of only one book, as I had not expected to be staying when I set out from the Base; but fortunately my predecessors had left a very good assortment. The ones I remember enjoying most were: *Vanity Fair*, *Guy Mannering*, *Jane Eyre*, *The Forsyte Saga*, *Kidnapped*, *The Master of Ballantrae*, and *Whitaker's Almanack*. There were times when the Bible made very good reading.

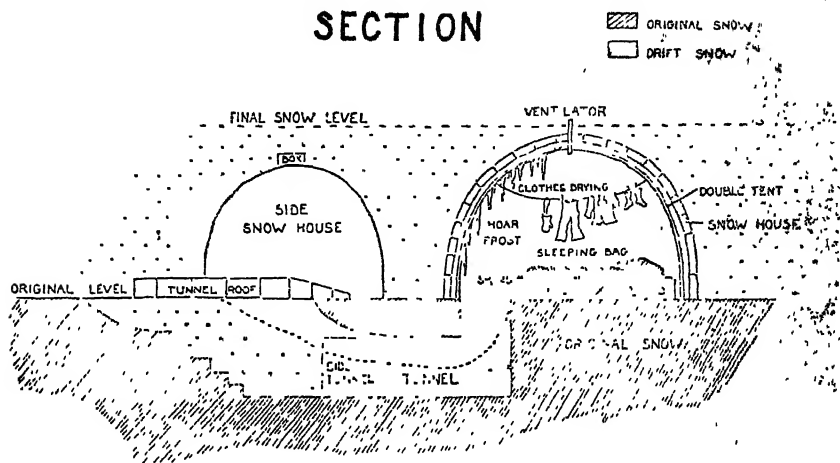
One fact which I have not yet mentioned, but without which this chapter would not be complete, was the curious growing feeling of security that came to me as time passed. Many doubts presented themselves to me at the start, and for a while they grew in number and in weight. But, as each month passed without relief, I felt more and more certain of its arrival. By the time I was snowed in I had no doubts on the matter, which was a great comfort to my mind. I will not attempt any explanation of this, but leave it as a fact, which was very clear to me during that time, that while powerless to help myself, some outer Force was in action on my side, and that I was not fated to leave my bones on the Greenland Ice Cap.

On May 5th the primus gave its last gasp. A few minutes later an extraordinary scraping and scratching sound was heard overhead, which turned out to be the relief party. On being

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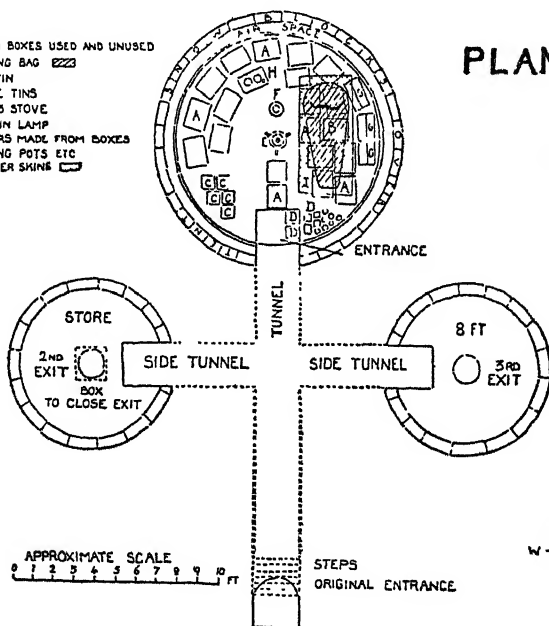
extricated I found I was perfectly all right, except for a slight feeling of weakness due to the lack of exercise. However, I was able to

SECTION



PLAN

- AAA RATION BOXES USED AND UNUSED
- B SLEEPING BAG
- CCC PARAFFIN
- DDD REFUSE TINS
- E PRIMUS STOVE
- F ALADDIN LAMP
- GGG LOCKERS MADE FROM BOXES
- NH COOKING POTS ETC
- J REINDEER SKINS



By courtesy of the Scott Polar Research Institute, Cambridge.

walk slowly, and in the following days quickly recovered my full strength.

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If there are any useful conclusions which I can draw from this experience, they are these:

(A) It seems to me that there is no objection to leaving a man alone, provided that:

- (1) he volunteers for the post himself;
- (2) he is certain of the strength of his house, of his food supply, and of his ultimate relief;
- (3) he has plenty to occupy his mind.

(B) I consider that a man for this purpose should have an active, imaginative mind, but not be of a nervous disposition.

(C) It should be remembered that the remotest risks become, by brooding on them, grave dangers; so that every element of doubt should be eliminated by providing alternative plans for any emergency. If this is done there is no reason why any normal person should not live in perfect peace of mind for an indefinite period.

(D) A further important point to be considered is that, if the outside world is to know of the plan of leaving a man alone—as now, with wireless, is unavoidable—it must also be provided with information to assure it of his safety.

The following suggestions as to the fitting out of a station might be useful. The house should be of the "igloo" type, built of snow blocks, with a canvas tent, similar to the one described, inside. The entrance should be through the roof of a smaller snow-house connected by tunnel, and it should have a good trap-door with no cracks in it, to be secured from the inside. The rations should be as varied as possible, and contain every need that the body requires, with, of course, an anti-scorbutic, such as lemon-juice. There should be a plentiful supply of books. For heat and light an Aladdin paraffin lamp is excellent, and a primus stove for cooking. A good tall landmark should be erected for finding the station. No instruments should be more than a few feet from the house unless a life-line is rigged, as there is danger of getting lost if the weather is bad.



RYMILL, WATKINS, COURTAULD AND CHAPMAN ON THEIR ARRIVAL AT THE BASE

CHAPTER XI

The Assault on Mount Forel

IN 1912 De Quervain, the Swiss explorer, sledged across the Ice Cap from Godhavn, on the West Coast, to the head of Sermilik Fjord. As he approached the East Coast he saw, far to the north, a massive range of mountains dominated by one peak larger than the others, which he named Forel. De Quervain, from a distance of 70 miles, fixed the position of Mount Forel and estimated its height at 11,200 feet.

In 1929 Wordie, leading a Cambridge expedition, reached the summit of Petermann Peak, 400 miles further north than Forel. With a height of 9,650 feet, Petermann was the highest point ever reached in the Arctic. Should De Quervain's estimate prove correct, however, Forel would be at least 1,500 feet higher.

One of the primary objects of the expedition was to map the inside border of the coastal mountains, and, if possible, to climb Forel. On every journey to the Ice Cap Station we had seen the inspiring snowy dome of Forel reflected to fantastic heights above the northern horizon. Those of us who were mountaineers were continually wondering what hopes we would have of reaching the summit, and what height it would prove to be should we succeed.

From the aeroplane, flying at 10,000 feet, we had seen Forel and its neighbours, and had noticed that a wide and apparently smooth glacier led from the Ice Cap right to the foot of the Forel range. The first plan therefore was to make a daring assault by aeroplane in winter, when the crevasses would be safer. The equipment would be landed first, followed by the men, who would endeavour to reach the summit while the Moth waited. This plan

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had to be abandoned as soon as we saw the sort of weather we were likely to have during the winter.

Then, at the beginning of March, Stephenson, Wager and I set off to sledge to Kangerdlugsuak along the edge of the Ice Cap, hoping to climb Forel either on the way out or on the return journey. As recorded earlier we were so delayed by deep snow and strong wind that we were forced to return before we had even gone half-way to Forel. However, we learnt from this journey that the best approach to Forel was to come down a high ridge of the Ice Cap from the north-west, and to give a very wide berth to the maze of crevasses at the head of the big glacier which falls steeply into Sermilik Fjord from the icefields south of Forel.

By the beginning of May the weather seemed good enough for a second attempt, though snow and fog delayed the start till May 6th. Stephenson, Wager and Bingham left the Base early on that date, and reached the Big Flat Depôt in nine hours. It was so hot that they wore only thin vests and grey flannels, and during the night, with all three in one tent, the heat was stifling. At 9 a.m., when the loads were being sorted out and lashed up, Captain Ahrenberg's Junkers monoplane flew over them, bound for the Ice Cap Station. At midday it returned and, altering its course to pass over the sledge party, dropped a note within a yard of the sledge. This contained the good news that D'Aeth had seen Watkins' party returning, with Courtauld walking and apparently fit.

On the previous journey the party had taken compass bearings on the various peaks of the coastal belt, whenever these had been visible through the fog and drifting snow. This had not been very satisfactory, as they were so far away. Stephenson now stopped each day to take a round of horizontal angles with the theodolite. Even this was unsatisfactory because of the difficulty of recognizing the individual mountains from stations 20 or 30 miles apart.

The sledging conditions were almost ideal, 176 miles being

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covered in thirteen travelling days. This brought them round the head of Sermilik valley to the foot of Forel on May 22nd. They had only two dog-teams and sledges, enabling the spare man to go ahead on skis. The surface was level, and the snow usually hard enough to support the dogs and sledge runners, though not quite firm enough to bear the men, who had to wear snow-shoes all the way. A blazing sun alternating with cold winds made their faces very sore and increased the problem of devising suitable clothing.

On this journey they followed the military plan of regularly taking ten minutes' rest each hour. This worked very well. Sledging on the Ice Cap is not only very hard work but terribly monotonous, and unless one has something to look forward to the hours seem interminable. As the next sledge is probably 100 or 200 yards away there is no opportunity for conversation.

On this journey, too, the routine of the three-man-tent unit was reduced to perfection. The cook, who was changed daily, would be awakened by the alarm clock at 5 a.m. He would bring the ration box in from outside and wake the others when the porridge was ready. The other two would dress while the water for the tea was heating, so as to be ready to go out and start lashing up as soon as the meal was over. Then, with plenty of elbow-room, the cook could make the lemon drink for midday and pack up the kit. It usually took them only two and a half hours from the time the alarm clock went till they were ready to start moving. Admittedly things take much less time in warm weather, but it was a daily saving of one and a half hours on our usual time. There would be a stop of an hour for lunch at 12.30, and then another spell of sledging till six, when camp was pitched for the night. They had to lie up on May 10th, 11th and 20th for wind, and for half a day on May 15th; otherwise they averaged nearly 13 miles per day: a very good average for heavy loads.

All the time the aspect of Forel was changing daily, and becoming more and more formidable. The approach looked fairly easy, but the mountain itself seemed higher and steeper the nearer

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they got. The Ice Cap here consisted of great valleys and ridges. They were at a height of about 8,000 feet by now, having climbed consistently since leaving the Big Flag. Sometimes with a temperature below zero and a strong wind it had been almost as cold as a winter journey. On May 17th, having avoided the Sermilik glacier, they were glad to steer east and turn their backs to the direction of the prevailing wind.

From here there was a fine view back over the desolate ridges they had crossed, with their white track winding away up the hills, deep in shadow. There was also an unobstructed view down the enormous valley above Sermilik Fjord, which they had been skirting since leaving the Big Flag. It appeared as a great sag in the surface of the Ice Cap. Little wonder it was so much crevassed, seeing that the ice falls 9,000 feet into Sermilik in only 40 miles.

Looking ahead the approach to Forel was plain. I give the account of the reconnaissance and assault on Forel in Stephenson's own words:—

"The inland side of the mountains around Forel is bordered by a wide glacier flowing in a south-westerly direction, the Ice Cap boundary of which is marked by a series of nunataks. Around these nunataks inland-ice falls in steep crevassed slopes, but the intervening valleys are smooth and free from crevasses, affording easy access to the glacier. The mountain-side of the glacier is fed by many tributaries which drain the area we hoped to explore. One of these tributary glaciers led straight to the foot of Forel and appeared to be free from crevasses.

"This, then, was our obvious route, and to our astonishment we were able to sledge across the big glacier and up the tributary to Forel without crossing a single crevasse. We passed through this gateway to Forel on the sixteenth day after leaving the Base, having travelled on thirteen days and covered a distance of 176 miles. Apart from the three days when we had to lie up, the weather had been warm and sunny, but the surface was soft and, except for the man who went ahead on skis, we had to wear snow-shoes every single day. Skis undoubtedly provided the best method of travelling, but the surface was still considerably cut up with wind-drifts

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and it is impossible to manipulate dogs and a sledge over such a surface when wearing skis.

"From the time we had turned our course eastwards the aspect of Forel had changed daily, and during the last few days of the journey we concluded that the only feasible approach to the summit was from the south-west. The summit is an ice dome which everywhere caps a rock wall of about 1,600 feet, rising up from the almost flat glacier below. Where the rock rises steeply the ice dome ends abruptly in an overhanging wall of about 200 or 300 feet. But above the easier south-west ridge the edge of the ice-dome was less steep. This ridge ran up from a snow col between Forel and an adjoining mountain which we called Camp Mountain. On our first arrival we went straight to the west side of the col, only to find that from here the ridge which we proposed to climb appeared to be more accessible from the east of the col. So we sledged round to the south of Camp Mountain to investigate the approach from the east. On this side of Forel, however, we discovered a hollow 3,000 feet deep, encircled by mountains rising precipitously from the glacier below. Beyond this were many fine peaks and glaciers, the latter draining into a glacier 8 or 9 miles wide, running south-east into the head of Sermilik Fjord. From this immense system of glaciers we were cut off by a very steep rock wall of 3,000 feet. This difference of level between two glacier systems so close together was most unexpected, and we had to return to the western approach.

"Camp was pitched within a quarter of a mile of the foot of the col at a height of 9,180 feet. The next morning, leaving Bingham in the camp to look after the dogs, Wager and I set off at 6 a.m. for a reconnaissance of the col. Progress was slow as the snow was from 12 to 18 inches deep, and the slope up to the col fairly steep. There were two bergschrunds to be crossed before we could get to the top, the first of which presented no difficulty as there was a firm snow-bridge. The upper lip of the second, which extended to the top of the col, proved difficult. It was snow-free ice and at a slope of 75°. The angle of the slope was so steep that in order to cut a step 6 inches wide the back wall of the step had to be 2 feet high. This took a long time and we did not reach the ridge of the col, 700 feet above the camp, until 10 a.m. The other side of the col was a smooth ice slope which narrowed rapidly and fell steeply down a couloir to the glacier, some 3,000 feet below, on which we had looked down from the southern end of Camp Mountain the previous day.

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To get to our ridge we had to cross this steep ice-slope. Steps were difficult to cut, and Wager, who was leading, had to return once or twice to rest before we reached the foot of the rock ridge, about 60 yards away, two hours later. We then spent an hour on the rock, looking for the best way up, before returning to camp.

"The next day we were prevented from pursuing our attack on Forel by drifting snow and a strong wind. We therefore sledged across to a mountain we called Little Forel, owing to its close resemblance to Mount Forel, and climbed it, hoping to do some surveying from the top. Unfortunately when we left the base we did not think that we should be able to travel about in the mountains with such ease, nor did we expect to have so much time to spend in the region of Forel. For these reasons our survey equipment consisted only of a theodolite, hypsometer, and aneroids, and no plane-tableing equipment. So I decided to take as many rounds of horizontal angles as I could, plot them on paper, and fill in the details as on a plane-table. We took a $3\frac{1}{4}$ -inch micrometer theodolite to the top of Little Forel, and between the periods of mist and drift we measured angles to all the prominent points. The following day was also unsuitable for climbing Forel, so we measured a base on the glacier by making a ski-track as straight as possible and then driving the dogs up and down the track four or five times. The reading of the sledge-wheel was taken at the end of the first and last runs and a mean value taken. The dogs will always keep rigidly to a previously made track in any unknown country. We then took rounds of angles from both ends of the base and from the camp.

"On the third day after our first attempt on Forel the weather was good enough to try again. We left camp at 5 a.m., and the steps being cut we were able to reach the foot of the ridge by 6.15. The first 200 feet of the ridge consisted of rotten rock, and we had to go up either the gulleys or by the arêtes between them. Above this was steep but good rock, which meant climbing up a steep ridge by pitches 60 or 80 feet at a time. We then came to patches of snow and rock, the snow being treacherous, but fortunately only once was it necessary for both of us to be on it at the same time. Beyond these patches of snow the rock was rotten again, and great care had to be taken in selecting a route. The rock itself is a gabbro, rusty brown on its weathered side. Frequently as we climbed our eyes were attracted to small vivid patches of green, red or yellow lichens, sheltering in niches of the rock. Apart from these lichens there was no sign of any vegetation or life whatsoever.



LOOKING TOWARDS THE COAST FROM MT. FOREL

THE ASSAULT ON MOUNT FOREL

"We reached the top of the rock after six hours' climbing, but the ice dome, which from below had appeared to slope down gently, was much steeper than we expected. It came to an end at the top of a steep rock pitch, and we had little room in which to experiment. I belayed to the rock and Wager cut steps diagonally across the slope for one rope's length. Unfortunately the ice was of such a texture that instead of being able to cut a step with five or six strokes of the axe, it took twenty or thirty. To get to the top of the steep part about 300 steps would have been necessary, a task which required more time and energy than was available in such a small party. It would have been unsatisfactory for a tired man to attempt cutting these steps, as a miss-hit would have meant a loss of balance and an accompanying drop of 4,000 feet. We decided, therefore, that it was unwise for us to carry on. Before starting our descent we boiled the hypsometer and read the aneroids, from which we subsequently found our height as 1,770 feet above the camp. The latter, after a week's observations, was determined as 9,180 feet. Thus we had reached a height of 10,950 feet; 1,300 feet higher than the summit of Petermann Peak, until then the highest point reached in the Arctic.

"We took about five hours to descend, reaching camp by 7 p.m. Before we left this camp-site we spent another day climbing ice domes and nunataks in the area, for surveying and geological purposes. We then moved camp and sledged round to the north end of Forel, hoping to find a way to the summit from the north-east. On the way we were surprised to see a bird flying overhead. It was very high, about 2,000 feet up, and even from that distance appeared to be quite large. We came to the conclusion that it was a Greenland Falcon, though we could not be sure. We only saw one other bird on this journey, when we were climbing Little Forel. It darted past us at great speed, and looked very much like a snow-bunting, though again we could not be certain.

"The approach from the north-east was no easier than from the south, and we had not got time to spend two or three days on what might prove to be a fruitless investigation. From here we went north-west for two days and climbed a nunatak on the inland side of the big glacier. From the top of this, at a height of 10,500 feet, we had an excellent view of the mountains to the north, which form a wide belt stretching inland for 90 miles from the coast. This mass of mountains to the north lies in a region which existing maps portray as Ice Cap, with no mountains. There are many peaks and high ranges comparing favourably in height with

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Forel, and one which we named De Quervain's Peak is a possible rival to it. We could not be certain, as it was too far away to fix accurately by an intersection. The height of Forel was determined as 11,500 feet, by theodolite observations based on original heights by the aneroid and hypsometer. Throughout the week we were there the aneroid was very steady, and a similar steadiness prevailed at the base during the same time. This should prevent any outstanding error occurring in our estimations, owing to local disturbances."

It is worthy of note that although Wager was a most experienced alpine climber, Stephenson had never been on rock or snow before the expedition started; and to do a climb of this standard even under such a skilful leader was a particularly fine effort. On the first few days of reconnaissance he was able to practise various methods of belaying and hauling, so that by the time of the final climb Wager could rely on him entirely when going ahead to cut steps or when leading up the steep rock faces.

In the arduous journey out and the still harder days of climbing, mostly full ten-hour days too, the daily food consisted of:

Breakfast: $1\frac{1}{2}$ oz. oats, $\frac{1}{2}$ biscuit, cup of tea;

Lunch: 1 biscuit, 2 oz. chocolate, cup of lemon-juice;

Supper: 5 oz. pemmican, 2 oz. pea flour, $\frac{1}{2}$ biscuit, cup of cocoa; as well as the inevitable spoonful of cod-liver oil each day. That is about 20 oz. per diem, yet they felt perfectly satisfied and fit.

On May 30th they started off on the return journey. With light loads and downhill going they hoped to make good speed and to be able to ride the sledges, but they were soon disappointed. The surface was still soft and sticky in the blazing sun, which seemed to devitalize the dogs as well as the men. They had been surprised to have to wear snow-shoes all the way up, but they were more than surprised to have to wear them on the whole of the return journey too. Night travel was tried, but the newly frozen crust was just not strong enough to bear the weight of the dogs, and they had to endure the most tiring of all Ice Cap surfaces, that which continually breaks through under a man's weight.

THE ASSAULT ON MOUNT FOREL

After this experiment they returned to travelling by day, although the temperature was then usually 30° F. in the shade and the slush was getting worse as they got lower down. At this time of year the surface is in an intermediate state between the hard-frozen powder-snow of winter and the equally hard crust formed by the blazing sun of summer. As they descended the inconvenience increased till at midday 6 inches of clinging wet snow clogged the runners and made their snow-shoes almost too heavy to lift. In the morning three-quarters of an inch of ice would have to be scraped off the runners before the sledge would move.

The Big Flag was reached by lunch-time on June 9th. They had travelled 350 miles since they were last there and done it all on show-shoes, which was no mean achievement. They rebuilt the Depôt, which had collapsed in the thaw, and continued homewards, finding the valleys 6 to 8 inches deep in water. Bugbear was descended on the morning of the next day, but as no one saw them from the Base they had to put on boots and walk round the head of the fjord.

Summer had come since they were last at the Base. The Saxifrages and Alpine Azaleas were in flower among the rocks, and the Arctic Terns screaming over the fjord.

CHAPTER XII

The Art of Kayaking

IN winter there are many ways of hunting seals. You can shoot them in the open water or in leads among the ice, or you can set nets for them, or harpoon them at their breathing-holes. When the spring sun warms the air, the seals enlarge their breathing-holes and crawl out on to the ice to bask in the sun: then you can stalk them, hiding behind a white screen or, if you follow Stefansson's method, by pretending you are a seal yourself and emulating all its movements. But in the summer, when seals are more plentiful, there is only one way of hunting them, and that is from a kayak. And as the seal is more essential to the Eskimos than manna was to the Israelites in the wilderness, they have reached a high level of efficiency not only in the handling of the kayak but in the design of the craft itself and all its equipment.

The kayak is used everywhere in the Arctic from East Greenland to Siberia, but in a variety of forms. In places where the sea is completely frozen all the year, except for a few months in the summer, the Eskimos may be very skilful dog-drivers but are naturally not very accomplished kayakers. This applies to the Polar Eskimos from Cape York in the north-west of Greenland, who use a ponderous sort of kayak chiefly for walrus-hunting. At the opposite extreme are our Angmagssalik Eskimos, who can use a kayak in almost every month of the year and are probably the most accomplished kayakers in the world. Perhaps the Eskimos from south-west Greenland, where there is little pack-ice and consequently rougher sea, were more skilful at handling a kayak forty or fifty years ago, but now the West Coast is comparatively

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civilized and the motor-boat has largely taken the place of the kayak. At any rate, those of us who visited Holstensborg, Julianehaab and Ivigtut found that the standard was very much lower there than in Sermilik Fjord.

The kayak of the Angmagssalik Eskimo is not only a wonder of efficiency, but a veritable artistic triumph. It is the perfect canoe. Each detail has evolved till it has reached perfection. The kayak, like a racehorse, is a thing of infinite beauty. When the *Quest* first reached Greenland, we saw the natives in their kayaks throwing their harpoons with consummate grace; and later we saw them, dressed in waterproof coats, rolling the kayak right over in the water. They fell over on one side, and with a dexterous movement of the paddle appeared again on the other. We appreciated then the skill of this, as a trick, but it was not till we had had personal experience that we realized the importance, indeed the necessity, of being able to perform this strange evolution.

Watkins realized that it would be impossible for us to hunt seals in the summer unless we learnt to use a kayak. Furthermore, should we succeed in this, we would be able to support ourselves on journeys along the coast, instead of having to carry a vast amount of food and impedimenta. Europeans had learnt to go in a kayak before; in fact Nansen and Johansen had depended on them in that memorable journey to Franz Josef Land after the *Fram* had been frozen into the North Polar Ocean. But it was generally thought impossible that a European could learn to hunt seals from a kayak, or to roll it in the Eskimo fashion.

In the summer and autumn of the year we arrived we were too busy to think much about kayaking, but as soon as we were assembled again for the winter months we set about getting kayaks made. Unfortunately there was no communication with Angmagssalik by now, and we could not get enough wood. In some parts of the Arctic whalebone is used for the framework of the kayak, but at Angmagssalik there is always plenty of driftwood. Pine-trees get swept down the great rivers of Siberia, and following the Arctic drift, possibly within a few miles of the

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North Pole itself, are eventually seen by the watchful Eskimo floating about among the pack, great white tree-trunks 10 or 15 yards long.

We found it quite impossible to get into the natives' kayaks. The Eskimo has small, rather undeveloped legs which bend backward in the most phenomenal way. Most of the young men could not only touch their toes with their whole palm, but walk along on all fours without bending the knee. Indeed, they could get into kayaks which were only 5 or 6 inches deep.

Watkins and Lemon got their kayaks made during the winter, but there was then little time to use them, and although Watkins learnt to paddle his along, he waited till spring to learn how to hunt. And by then most of the rest of us had had kayaks made. The natives, working outside their tents in the sunshine, did not take long to build them once they had got the necessary wood and skins. The framework is about 18 feet long and consists of five laths of wood longitudinally, and fifteen or sixteen transverse ribs, making the kayak less than 2 feet wide in the middle. These are most carefully cut out (with a pocket-knife, of course) and are steamed over the cooking-pots and then bent to the required shape. The various parts are cunningly spliced together, and held in place by wooden pegs. The extremities, where the keel and two side pieces meet, are a work of art. Skins of the large bearded seal are preferred, but only one or two of the most skilful hunters had their kayaks covered with these. Most of them had to use skins of bladder-nosed seals or even of the Greenland seal. Kayaks covered with these have to be re-skinned each year, but the bearded seal-skin will last two or three.

The skins are allowed to putrify till the hair and grain of the skin can be easily scraped off. The smell of the skin is then most nauseating, yet the natives eagerly gobble up any of the trimmings. Two skins are usually enough, and they are put on wet and pulled as tight as possible before sewing, so that when dry the skins are as tight as a drum. Sinew is used for the stitching, which is done in two rows about half an inch apart, so that the finished kayak is com-

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pletely waterproof after it has been treated with boiled seal-oil. Coat after coat of this is rubbed in till the skin will absorb no more, and the last layer forms a coat of shiny, sticky varnish. A wooden ring, which will just fit over the hips, is fixed to the frame and supports the seal-skin on a row of small bone pegs on its inner side. During the construction a few loops of stout seal-skin have been built in to hold the various hunting instruments. The most important of these are three parallel thongs, joined together by four ivory ornaments just in front of the hole. These are to hold the paddle while one is getting in, thus giving the kayak a certain stability, on the principle of an outrigger. At first most of us found it quite impossible to get into the kayaks: we would get our feet in and then heave as hard as we could on the seal-skin thongs; but our knee-caps always seemed too large.

To begin with we got in on land, which was hard enough, and were then lifted into the water while our instructors still held on to the stern. At first it felt most unsafe, very like trying to ride a bicycle for the first time. You wobbled one way, and then went too far over the other way trying to correct your balance, and finally lost it completely. The paddle laid flat on the water steadied you a little, but it was all most precarious, and purely a matter of balance. After a bit we could gingerly paddle along, being very careful round corners, and staring fixedly straight in front, for the least turn of the head started a wobble.

The native kayak deck was almost flush with the water, but ours, unfortunately, which were so much higher, had several inches of freeboard. This made them even more unsteady. After learning the first stages the next thing to do was to gain confidence, and to do this we went for quite long trips with the natives, while they looked after us most carefully, never letting us go far from them, and helping us to get in and out. When hunting or travelling in the fjords a small circular apron is worn which comes up almost to the armpits and fits tightly over the kayak-ring, so that in a rough or choppy sea small waves can wash over the deck without wetting the man or getting inside the kayak.

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The kayak has to be light and stream-lined so that it can travel fast and easily, yet it often has to be carried over land from one fjord to another if the ice is impassable round the intervening point. It has to be flat-bottomed because one often has to run out in it on to new ice, and wriggle across still in the kayak, taking to the water on the far side. When you are in a kayak you have perpetually to balance it. If you relax you capsize at once. With experience, of course, you learn to balance it unconsciously.

Often during the vicissitudes of seal-hunting the craft is upset. One kind of seal, the larger bladder-nosed seal, has the nasty habit, when wounded, of attacking the kayak under the water and biting lumps out of it. Then when the kayak has turned turtle and the hunter hangs helpless underneath, the bladder-nose has him at its mercy. It is easy, too, for some part of the hunting gear to get caught up as the harpooned seal makes its last convulsive rush for freedom. In the rough seas of winter the kayak is always liable to capsize when caught in a sudden gale, whereas in summer the icebergs, eroded by the warm surface-layer of the sea, are continually breaking up or rolling over, and many an experienced hunter has been overturned by the waves thus produced.

When the kayak turns upside down its occupant would drown, if the Eskimo had not evolved a special method by which he can go over on one side of his kayak, remain for a moment completely upside down, and then with a dexterous movement of his paddle come up again on the other side. To do this he wears a waterproof coat made of seal-skin with the hair removed, and specially prepared. This coat fits tightly on the bevelled wooden ring round the kayak-hole, by an adjustable seal-skin thong which is sewn into a loop on the coat. A similar thong is tied tightly round the face and wrists, so that when the kayak is upside down the only part that gets wet is the front of the face. Not a drop of water can penetrate the skilful double sinew stitching of the kayak coat. Double-thumbed gloves are worn so that when the palm gets sodden the glove can be turned round on the hand.

We had seen the Eskimos "rolling" of course, and like most

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skilfully performed acrobatic feats it looked easy, though we knew it would take some time to learn. The leader thought that if the natives could do it, we should be able to imitate them after a certain amount of practice. Watkins actually learnt to do it several weeks before the rest of us, but though he could usually perform it, he was not exactly certain what the movement was.

I remember very well when I started my first lessons. Three days after I first got into a kayak I went in a single day about 10 miles down Sermilik Fjord on the way to Angmagssalik, and being rather pleased with myself, thought I was ready to learn to roll. When we got to Angmagssalik the local schoolmaster and the wireless operator's assistant, who were about the best kayakers, came out to "pick up," while all the inhabitants lined the shore to watch the fun. Putting on the waterproof coat was an uncomfortable beginning. The natives have well-covered cheekbones, but with our bony faces the thong has to be pulled so tight to keep the water out that it is almost preferable to get wet. I got into my kayak and felt even more uncertain than usual. Watkins performed first. He rolled several times, but often he only just came up: he was making some slight mistake. An Eskimo then gave a demonstration. He lay on the surface of the water supporting himself there as long as he liked by paddling to and fro, then got up again by pressing downwards with the paddle. Later he went right over, stopped on the surface as he came up again, and then got right up. After that he rolled his kayak without using the paddle, but with the harpoon throw-stick, a flat piece of wood 18 inches long and narrower than the paddle. Watkins tried this, but failed. When he stuck upside down two natives paddled up close on each side and Watkins pulled himself up by holding on to the other kayaks.

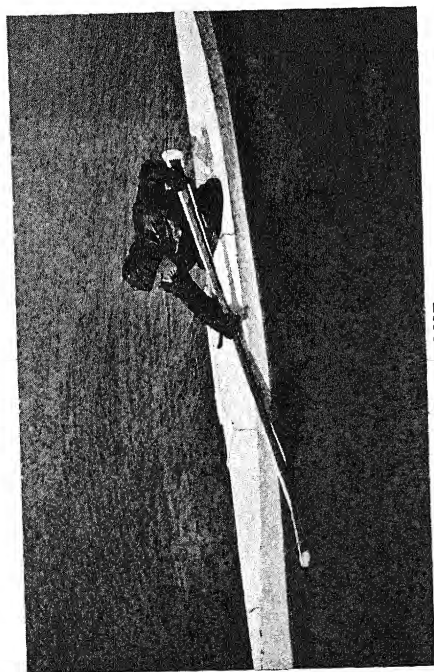
Then it was my turn. I had rehearsed the movement carefully on land. If I rolled by falling over towards the left, I must keep my left hand (holding the extreme end of the paddle) right down, almost touching the kayak-deck. With my right arm held well down the paddle, I was to make a big sweep over my left shoulder

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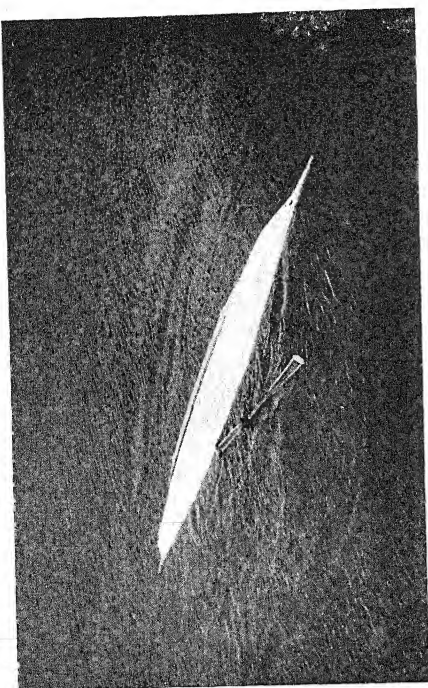
and above my head. If I cut the stroke, or if I raised my left hand, I would fail to come up.

I got into the right position for starting, and feeling quite petrified let myself slip over into the icy water. Once underneath, it all seemed so odd that I made a dash at the stroke, cut my swing, lifted my left hand and was quite surprised when nothing happened. I dropped the paddle, put a frantic hand up on each side of my kayak, and watched the slim bows of the other kayaks coming slowly alongside. I grasped them and soon breathed the air again. I tried this several times, but though I once got my head above water I slipped back again. Then, as we were all rather cold, the session was closed.

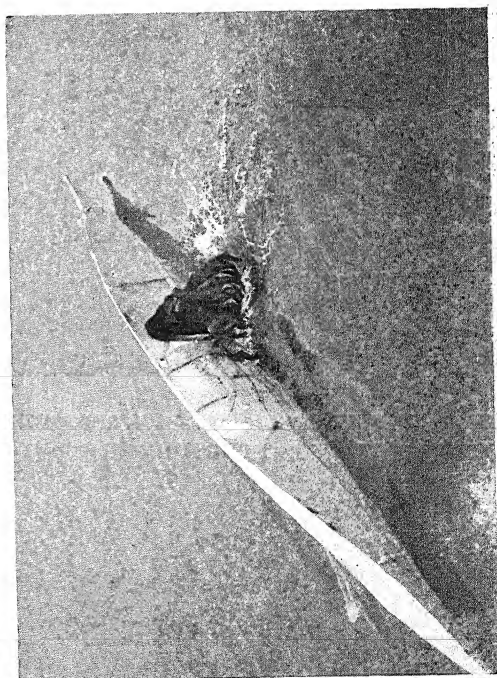
Later, when the water got a bit warmer, we practised this among ourselves for hour after hour at the Base. Watkins became very skilful. Although it is essential that a hunter should learn to roll a kayak if he wants to feel safe when hunting alone, it is typical of the improvident, happy-go-lucky outlook of the Eskimo that only about one in four of the hunters do so. In spite of the fact that about a quarter of their deaths occur while hunting, they just do not bother to learn. Of course it is quite possible in an encounter with a seal for the hunter to lose his paddle, so a few of the natives—about half a dozen in the whole Angmagssalik district—have learnt to roll the kayak with the hand alone. This looked quite impossible at first, but after several weeks of practice, Watkins actually learnt to do this too. When the natives were practising rolling with a throw-stick, and with the hand alone, they used to hold the paddle in the other hand in readiness. Often you would see a native try with his hand, get half-way up, then slip back: there would be a few seconds' pause, then he would try with the throw-stick, only to fail again. Eventually he would come up, beaming with joy, using the paddle, having been underneath for the best part of a minute. We would practise going along at full speed and then capsizing. It was often difficult to get the paddle into the correct position, and this was very good practice for the real thing, when one would have no chance to think about it before capsizing. As



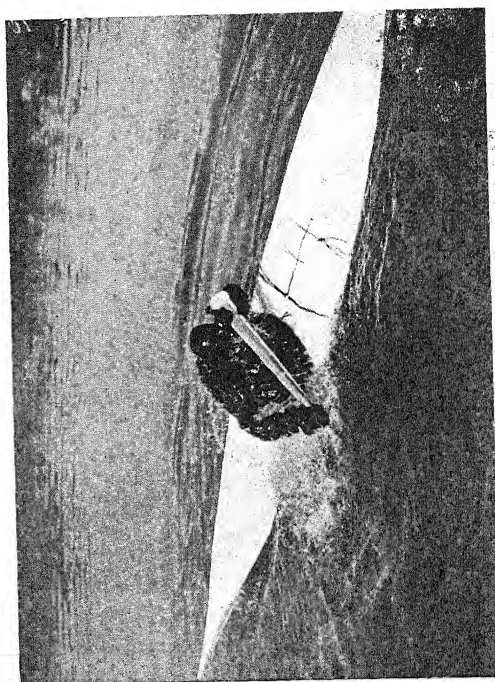
ONE



THREE



TWO



FOUR

WATKINS ROLLING HIS KAYAK

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well as the ordinary method, the more skilful natives had a great many "trick" rolls. A few could roll the kayak keeping the paddle behind the neck all the time, while one or two held the paddle right against the bottom of the kayak during the roll. Once you are quite certain that you can always come up using the standard method, you can, of course, go on practising "stunts" for hours on end. But very few of us got this feeling of absolute confidence. Once in a while something would go wrong and for some reason we would fail to come up, and have to be rescued. Eleven of us had kayaks built, and seven learnt how to roll, but Watkins was the only one who learnt to do it with the throw-stick or the hand alone.

Towards the end of the expedition, Cozens got D'Aeth to take a cinema picture of a concerted roll for the film he was making. Six of us joined up in diamond formation: Watkins, Cozens and Hampton in front; Rymill, Lemon and myself in the rear. The first time Cozens said "One—two—three, go," and we all came up successfully. He thought this was too good to be true, so we tried again. Next time I wasn't quite ready, and went over without having got my paddle in the right position. I came two-thirds of the way up, but fell back again. I changed the position of my hands on the paddle and made another attempt. Again I came two-thirds of the way up and slipped back. I dropped my paddle and frantically waved my hands. It is rather difficult to paddle directly sideways and the man next to me was still trying to reach me when a native who had been watching at the front came at full speed zigzagging through the other kayaks, and pulled me out.

Having learnt the most essential part of kayaking, and having got a lot of fun out of it, we set to work on the more serious work of hunting seals. The most important instrument for seal-hunting is the harpoon. Forty years ago, before the rifle was introduced at Angmagssalik, all seals were secured with this weapon. The wooden shaft terminates in a square piece of ivory to which a tapered ivory rod 6 or 7 inches long is cleverly hinged with a bit of seal-skin line. An arrow-shaped metal point riveted into a barbed

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ivory head fits over the thin end of the ivory rod and is attached to a long seal-skin thong about 40 feet long.

When the harpoon hits the seal, the barbed head turns sideways in the animal, the ivory rod "breaks" to take up the shock of the impact, and then together with the main shaft floats clear, leaving the seal attached to the line. Normally the line, which is most carefully cut in spirals from a bearded-seal skin, is coiled up on a wooden tray on the kayak-deck. The other end of this line goes to a float behind the hunter's back. This float is the complete skin of a seal, with the hair removed and all the orifices carefully bound up. The harpoon is thrown with a short piece of wood—the throw-stick—which merely acts as a lever and remains in the hand after the harpoon has been launched. The harpoon lies on the right-hand side of the kayak, with the throw-stick uppermost ready to be grasped. The latter is grooved each side to fit the thumb and fingers, and often ornamented in relief with carved ivory figures of seals and imaginary animals. When the hunter throws the harpoon he lifts it by the throw-stick, which is held to the shaft with two ivory pegs, and slowly draws it backwards so that his right hand is just behind his head, then he hurls it forward. The Eskimos' aim is amazingly accurate, and to keep it so they are continually practising. If a man goes out in his kayak to catch cod or collect seaweed, he will throw his harpoon every few minutes as he paddles along. When practising, of course, the harpoon is not loaded. The metal barb is put on the tray with the rest of the line.

The rifle is kept in a waterproof cover which is attached to the bows. The butt is ready to hand underneath the tray for the line. In front of the hunter, or near the bows of the kayak, is a white cloth screen so that when he hides behind it the seal merely sees what he thinks is a lump of ice. Parallel to the rifle on the left side of the kayak is the bird spear with a barbed metal point. This is used for catching Eider Ducks or Guillemots, especially in winter when they are loath to fly. Half-way down the shaft are three large bear-bone prongs barbed on the inner side, the idea being that if the central spear misses the bird, its head may get caught between

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the shaft and one of the prongs. An Eskimo told me that one cold winter he got fifty Black Guillemots in a single morning when they were huddled together in an open pool among the ice. On the back of the kayak a lance and bladder dart are sometimes carried. The lance has a metal unbarbed head, and is used for killing bears, and for finishing off seals if they have only been wounded with the harpoon. When it comes up to breathe, being unable to go far dragging the float, the hunter approaches and throws the lance, which falls out easily and can be picked up and thrown again.

The bladder dart has a small float (made of the gullet of a large gull) attached to the shaft, and a metal point with a large barb. It is used for catching small fjord seals. As well as all this a rifle-rest is usually carried on the back of the kayak.

I went out hunting for the first time at the end of June when seals were fairly plentiful. There was a heavy swell on the sea, and the icebergs were swaying up and down in a most disturbing way. Each kind of seal seems to behave differently at every season of the year, and very great experience is needed before the right tactics are invariably followed. On this occasion, after an hour of touring about and waiting for a seal, we suddenly saw a black head and body appear far in front. The native said it was a young Greenland seal going a journey, and would appear next time well to the left of our course. While the seal is up the natives remain motionless, but the moment it dives they start to paddle furiously in the direction where they expect it to reappear. When going at full speed the natives take long powerful strokes, each time sliding the paddle along in their hands to get the maximum power. They go so fast that the back of the kayak is almost forced under water. When the Eskimo got what he judged to be the right distance, he stopped and waited. Suddenly the seal appeared only 20 or 30 yards ahead. It saw us at once, so the native got out his rifle and shot, hitting the seal in the head. Had the seal not seen us the hunter would have crouched low behind his screen and tried to get within harpooning distance, without using the rifle at all. As it was, he pushed his rifle back into the case.

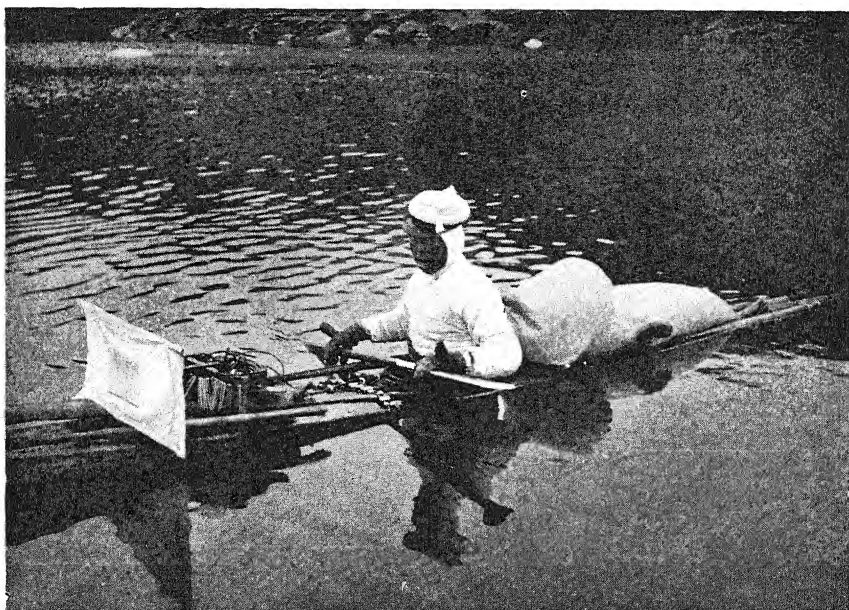
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and with a few quick strokes reached the seal before it started to sink. Had the seal shown signs of sinking at once, or had it been only wounded, he would have harpooned it too. The next thing he did was to take some sharp bone pegs from his kayak-deck and plug the wound so that no blood would escape. Then, as it was a small seal, he steadied his kayak against mine which was alongside and lifted the carcass out of the water and put it on the back of his kayak just behind the float.

Soon after this we saw a huge black head appear out of the water. It was a Bladder-Nosed seal, the "devourer," as the Eskimos call it. The natives approached it, but just before we got within range it dived, showing all its body as it curled over, and none of us saw where it came up again. The small Fjord seal dives for about five minutes, but the big Bladder-Nose usually stays under for twenty minutes.

As well as the four or five different kinds of seals the Narwhal and Walrus are also hunted from the kayak. The Narwhal is a small grey, round-snouted whale about 15 feet long, which has a single spiral tusk of ivory in front that may be as much as half the length of the animal. The walrus is rare so far down the East Coast and is exceptionally fierce when wounded. Both the animals are particularly prized for their ivory, which is invaluable to the Eskimo as it is used for all artistic purposes as well as in most cases where we would use metal. The soft skin and blubber of the Narwhal is also a very great delicacy, and as only about a dozen are obtained each year, it is a great event when a hunter is lucky enough to catch one.

At the end of July I was staying at a settlement called Ikatek at the mouth of Sermilik Fjord. One day I went out hunting with four of the natives and instead of taking my harpoon and line, I took with me a 16-mm. cinematograph camera. We left the settlement and made for the open sea. As there was not very much ice about just then there was a long heavy swell, but it was a hot cloudless day. We went out about 6 miles from the land, chasing several seals on the way, but each time they reappeared out of range



(a)

ESKIMO HUNTER WITH EQUIPMENT AND CAPTURED SEAL



(b)

AFTER CHURCH AT IKATEK, JULY 1931

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and eluded us. There was not much other life about: a few small Arctic Terns flew past us, and once a Long-tailed Skua flapped along further out to sea. Suddenly there was a disturbance in the water, and a large grey-brown body broke the still surface of the sea, arched over in the water and disappeared. I could see as the Eskimos swung their kayaks round that it was something unusual, and when they excitedly whispered "kreaydewar" (Narwhal) I was so thrilled that I nearly capsized. We went all out towards land, straining every sinew. Soon the Narwhal appeared to one side, came up three times and disappeared again. We changed our course, and paddled as if possessed, taking great long strokes that hurled the light kayaks through the water. He came up again, this time swinging round as if to cross Sermilik, and we altered our course accordingly. This went on for more than an hour.

Luckily I was almost 20 yards behind and at each turn could gain a little by cutting the corners, otherwise I should have been left far behind. At last the leading hunter was just behind the Narwhal when he came up. The native manœuvred to get in such a position that the Narwhal was about 10 feet from him and thirty degrees out to the right. Next time it appeared the hunter hurled his harpoon and hastily threw the float overboard. The beast disappeared, dragging the float down after him. Both were below for several minutes. At last the float bobbed up, and the hunters, who had spread out waiting for it, rushed to the place. Soon the Narwhal appeared beside the float. Another harpoon was hurled and this time two floats were dragged down, but not for long. After a few seconds the great animal appeared and thrashed crimson on the surface. The harpoon point had found its mark.

The natives were all so excited that they started to shout and sing with joy as they crowded round to examine the blunt grey carcass with its two fins sticking out on each side like tiny wings, and its shapely tail which lay horizontal to its body, proving it to be a true whale. Normally the Narwhal would start to sink soon after death, and it would be almost impossible for a kayak to tow it home. Two kayaks were therefore brought alongside with the

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dead Narwhal between. A paddle was put across the kayaks, making them both stable. Then one man took out a knife and cut a small hole in the Narwhal's back. Next, working with a wooden peg, he made a space between the blubber and flesh of the Narwhal. With his hand on the paddle he then leant down and put his lips to the hole which he had cut, blew the Narwhal up as one does a balloon, and hastily inserted a wooden peg before the air could escape. After that the four hunters harnessed themselves to the dead Narwhal and started to paddle homewards.

I have never seen men so genuinely happy: all the way home they sang old songs and waved their harpoons for sheer joy. It was not a very large Narwhal, and when we got near a small island they decided to land and cut it up. A small piece on the back of each kayak, it would be easier to carry homewards. But the swell was so great that we were quite unable to land. Out at sea it had not troubled us, but here the breakers were rolling up the rocks with showers of spray and foam.

The ice-floes, on the other hand, rise and fall with the swell, and on them at any rate one could land. We did this, and hauled the Narwhal up on to the ice. Then it appeared, rather to my disappointment, that it was really quite a small one, being only about 8 feet long. Had it been much larger the natives said we would never have been able to catch it; as it was, we had had to give chase for more than an hour before a harpoon could be thrown. The big Narwhals are only killed when they are caught sleeping near the surface, and even after the first harpoon has been thrown they may still drag the float for several miles. After blowing up the Narwhal once more the Eskimos got into their kayaks on the floe and dived in them back into the water.

As we approached the settlement they all shouted out at the top of their voices that one Cardi had killed a "kreydewar." All the natives swarmed out of their tents and soon the animal was divided up. Every hunter who is present at a kill is entitled to his share of the spoil. The skin and blubber of the Narwhal have a sweet nutty flavour which is most delicious, and the meat is

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much like venison. Like seal-meat, it has no flavour of fish whatsoever.

For smaller seals the Eskimos often used 16-bore shot-guns with large shot. This stuns the animals and they can then be harpooned before they recover enough to escape. The seal often sinks almost the moment he is shot, and from a kayak a seal's head is a small mark for a rifle, even though the barrel is rested on the top of the screen.

The natives sometimes find it more convenient to wait for the seals to come to them rather than to go and look for the seals. That is to say, at certain times of the year they go out beyond the fjords and find some suitable ice-floe, on to which several of them climb from their kayaks to wait, with their rifles on stands, till a seal appears. Then from the stability of the floe they shoot it and, leaping into their kayaks, recover it before it sinks. The seals are often attracted nearer out of curiosity when they see the strange objects out on the ice.

It is possible also to shoot birds from a kayak, but, as with seals, only if they are straight ahead of it; otherwise one would capsize at once. Eider Ducks and Black Guillemots are often hunted in this way.

When we were at Angmagssalik in the middle of June they were fishing for cod from their kayaks. Rymill and I went out one day to the head of Tasiussac Fjord just as it became navigable after the spring thaw. We followed the shore after having to get out and carry our kayaks. At the head of the fjord the ice was spongy and full of holes. Fishing through these with a hook and a piece of scarlet rag for bait we each got twenty or thirty large cod in an hour. The trouble was taking them home. With so large a deck cargo the kayak was more than usually top-heavy, and several times we were nearly over.

It is an interesting fact that up till 1923 no cod were caught at Angmagssalik, whereas now they are very common indeed.

As well as cod there are halibut, but I never saw the natives catch them. They sometimes got a scarlet fish, not unlike a roach,

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whose eyes used to pop out when it was taken out of the deep water. Once at a settlement in Sermilik I was given a wonderful meal of sea perch. These had just been taken out of the stomach of a bladder-nosed seal.

CHAPTER XIII

Ivigut Journey

BY J. M. SCOTT

I LIKE to imagine that the Ivigut journey was my own, both in plan and development.

Actually one realizes that, as usual, Gino Watkins was its modest father, while oneself was no more than the casual mother who schemed and suffered in its development. The idea was conceived when he and I were travelling together southward from the Ice Cap Station in October 1930. At that stormy season we had failed to get more than 95 miles southward and we had failed to chart the inside edge of the coastal mountains.

Valuable or not, it was a task unfinished. One could do it on the way home, instead of waiting at the Base for the Danish ship. It would be a good idea, a gesture, to go home across the inland ice, and since on a journey one inevitably plans other journeys, we began already to discuss the details. Watkins, by a few stray remarks, had produced the enthusiasm, and the detailed plans developed naturally throughout the winter.

The first question concerned the size of the party, and about this for a short time we argued. Watkins was in favour of two men; he thinks that such a party is more mobile, and he can get on with anyone: but I was less confident. Besides, a party of three can sleep in the same tent (with a little discomfort), cook on the same stove, and yet manage an extra sledge. The bigger the working party which can be considered as a single unit, the more efficient it will be: that is, the greater distance it can travel.

We would take a sledge each. A man whose sole duty is to

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walk in front of the dogs is no more than a passenger: with well-trained teams on a smooth surface he is quite superfluous.

So far it had seemed that six weeks was the natural staying power of a unit of two men each driving a team of seven dogs. Dog food is the essential factor of any sledging-journey: in warm weather, at least, the men's rations are much more elastic. As usual we catered for six weeks as giving the most efficient load. We had to sledge 450 miles, and possibly we might take longer; so I decided on three teams of nine dogs each, and dog food in proportion. Each dog would have a pound of pemmican every day, but no fat, since the weather would be warm. If after three weeks we had covered half the distance, well and good. If, on the other hand, we were behind the schedule, we could kill two dogs from each team and so liberate enough pemmican to feed the remainder for six extra days. It would be a confession of failure to kill these extra dogs in the middle of a journey, but their presence increased the margin of safety.

The men's rations were reduced considerably. We took food as for a two-men unit, reducing the margarine and adding chocolate in its stead. Watkins' rations had proved so nourishing that we knew this would be ample for a summer trip; but we took 14 lb. of man pemmican besides, as an iron ration in case anything went wrong. This proved an excellent arrangement. When we reached Copenhagen I was asked by a reporter what were the worst hardships we suffered on the journey. I was perfectly serious when I told him that once or twice we had eaten too much. On a long journey comfort is essential, but comfort depends chiefly on the lightness of the load. We saved weight in a number of ways. We kept the dog pemmican in its three-ply wooden boxes, but we removed it from its tins. We took only three-quarters of a gallon of paraffin a week, which is ample if one cooks slowly; and we carried down instead of deer-skin sleeping-bags.

For the personnel, Martin Lindsay was an obvious victim. We had been companions on several journeys and knew exactly

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how to work together. At first I hoped that Courtauld would come too, but by the next year he had so obviously exceeded trade union hours on the Ice Cap that it was a great relief when Stephenson came back from Forel and expressed his readiness to do another journey. He would assume the unenviable responsibility of finding the way and, as a first-class surveyor, would be very useful in mapping the coastal mountains. Besides, he was a clever sledge carpenter and knew the routine of a three-man tent.

The journey was scheduled to start on July 1st. Already our food was at the Big Flag Depôt; but in the last days of June we were still busy ferrying over in the small rowing-boat, tents, sledges and equipment, and carrying them up over the rocks to the foot of the glacier. Watkins had taken the whale-boats to Angmagssalik to prepare them for his journey to Julianehaab.

The transport of the dogs presented the worst problem. For the first two days we would be accompanied by a small photographic party, Cozens and Riley, which would add six dogs to our own twenty-seven, and our only means of transport was an 8-foot rowing-boat.

Watkins solved the problem by arriving back from Angmagssalik on June 30th with two whale-boats, a fleet of kayaks and an umiak full of camp followers. For the first time the whole expedition slept together in the Base hut.

July 1st was a beautiful day. At four o'clock in the afternoon we made our farewells, and piled ourselves, men and dogs, into the boats. Half the expedition came with us, and helped us load the sledges and put on the dog-boots. Then we drove off on the rough, snow-free ice of the lower slopes. At the top of Bugbear Bank we paused for our last sight of the Base, and then turned westward into the bright evening.

It was not freezing; there was a lot of water about, and the crevasses looked dangerous. Their snow bridges were sagging and seemed insecure. But we crossed them with the leader walking in front, roped to his sledge, and reached the Big Flag without adventure at 3.15 next morning.

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We spent a couple of hours arranging our stores while Cozens walked round taking photographs. Once I heard a small cry and looked up to see that he had disappeared up to his shoulders. I pushed a bamboo pole under his arms and then Lindsay and I helped him out of the crevasse, very worried about his camera. When our work was finished we went to bed till afternoon.

All day the snow had been as wet as a sponge, but in the evening it began to freeze. At 9 p.m. we started, the photographic party following because they wanted pictures of our next camp. We started west, but at once crevasses appeared before us; they marked the edge of Ikersuak valley, and we had to make a long detour to get round them. Several times a dog fell in and we were glad that the teams were in single trace, for the careless animals were pulled out at once by their companions, or else hung suspended in their harness until their drivers could reach them. As the frost sank into the snow our speed increased, and by midnight we were trotting easily besides the sledges. At seven o'clock we stopped to camp, and discovered from the sledge-wheel that we had travelled 18 miles. It must have seemed a long way to come for a few photographs.

At sunset we said good-bye to Cozens and Riley (Riley at one time was booked for this journey, and I think he was a little sorry to turn back). We then drove off south-westward, skirting the deep valley.

Now that we were alone, and beyond the crevasses, our lives became regulated by the steady routine of Ice Cap travel. The journey was successful to the extent that there were no adventures, and therefore as a story it is dull. But to us there was abundant interest in watching how our long-considered plans developed, in learning by experience some new points of sledging technique, and in adapting ourselves to the social life of our own small world. Our inward view was focused upon Ivigtut, and upon that alone, and we were happy because we seemed to be achieving our object so quickly and so easily. There was, of course, the scientific work: the meteorology, the aneroid readings and the charting

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of nunataks: but these were only part of the routine, and whether they were interesting or not was beyond our control.

We were travelling at night because it was the sensible thing to do: there was no shade, and therefore no shade temperature. At least on the lower levels the snow used to start melting at about nine o'clock in the morning, and it became increasingly sticky and unpleasant until late afternoon. On a clear evening it began to freeze early. Long before midnight it was covered with a thin crust of ice on which friction was reduced to a minimum. The weight of the sledge was immaterial, and on skis, grasping the handlebars with one hand and a ski-stick with the other, we glided along quite tirelessly until the sun rose high in the heavens, and the snow crust sweated beneath our feet.

That was the reason why we travelled at night: but before the journey was over we had recognized plenty of other factors, complimentary to our decision. The inland ice has much in common with the ocean, but being a solid it is more restricted in self-expression, except when translated by a winter blizzard into a volatile compound of air and flying snow. In summer it is placid and definitely dull. By day, one piece of snow looks exactly like the next, and once out of sight of land we had to depend for interest upon our imaginations. There was no fierce wind, and no drifting snow to occupy our minds with self-pity or futile annoyance. The nights were intriguing and fulfilled this end. In the evening the long shadows exaggerated the slope of valleys and the size of snow-drifts, and allowed us to imagine that we were walking the chalky slopes of Cambridgeshire. Then the sun disappeared, spurting red flames as it sank beneath the snow. At this season it was only below the horizon for an hour or two, and the gay sunset clouds had no time to lose their colour before they were rekindled to announce the dawn. For the first time we could study the subtle difference between sunset and sunrise. But a dog-driver, trying to keep his leader on a magnetic course, cannot be expected to put his appreciation into words. The twilight hours were not lacking in humour, for sometimes a

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distant mountain or the rising moon appeared distorted grotesquely by the mirage.

There was another reason for night travel. In winter we had shirked bad weather chiefly because of the long hours which must be spent in camping and breaking camp. Travelling we could keep warm, but we travelled during the best hours of the day. When it was coldest we had had to stand about and bare our fingers to handle rope. But now we travelled when it was cold, and only stopped because it was warm. It was pleasant to stand and stare. We even found time to pet the dogs.

In the tent we ate our meals lying about carelessly instead of wrapped to the neck in a sleeping-bag; and if we failed to sleep afterwards, it was because of the heat. We had removed the inner tent to give ourselves more room; the outer cover kept out the wind, but the sun baked through. Very often we slept naked on top of our down bags.

The journey naturally divided itself into three parts. First we went inland to avoid crevasses; then we kept down the coastline in the hope of seeing mountains as far south as Umivik, and then we turned direct for Ivigtut, over the height of land and down the other side. About once a week we lay up for observations; we got out the time signal set and the theodolite, and discovered our position. On three days of the twenty-eight which the journey took we funked the weather and stayed in the tent, not that it was impossible to travel, but because we were ahead of time, and could afford to avoid unpleasantness.

Lying up was very pleasant. At this high altitude we wanted little sleep and soon tired of reading. During the first storm I produced an atlas which kept us happy for a long time, and then Lindsay suggested that we should play some of the games from the *Week-End Book*, but since most of these required that at least one person should go out of the room we failed to find anything entirely suitable. We talked of home, which seemed nearer than it had for many months.

When travelling, our constant thought was to keep straight.



IVIGTUT JOURNEY. SCOTT 'LASHING UP' IN THE EVENING

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The three sledges were stretched out over half a mile, first mine, then Lindsay's, then Stephenson's. Stephenson set me in the right direction, and I tried to keep a course by the clouds, the sun, and the snowdrifts, or the wind upon my sledging-flag. Akajak helped a great deal; he was slow for a leader, but very efficient. Stephenson at the back could see when I got out of line, and so could stop and take another bearing. When I turned round he would wave his arm to right or left, or hold it upright to show that we were right.

It was easy enough in clear weather, but it was terribly difficult in a mist. Dogs have the same tendency as men to veer to one side or the other: we appreciated this fact, but when there was nothing whatever to focus on, one was inclined to correct too much and turn the other way. To describe such weather I quote from my diary for the night of June 12/13th.

"We were all fairly weary this morning although we only did about 11 miles. But it was the sort of night on which the grasshopper would have become a burden if there had happened to be any grasshoppers about. It was warm and muggy in the evening and we waited till 11 p.m. to let it freeze. Then it was a grand surface for travelling, but the light was hopeless. The whole show was just a white overcast mass which made it impossible to steer straight. Steve tried walking far ahead with the compass, but gave it up when he found that he was 90° out. After lunch, we worked the scheme of Martin going on 200 yards with me, and stopping when he was dead on the right bearing from Stephenson's sledge. Then I drove on, keeping his and Steve's sledge masts in line till they were about to disappear. Then I signalled to them and waited for them to come up. Luckily I had an Omar Khayyám handy which I read while waiting. We averaged about 1½ m.p.h. The temperature was 40° Fahrenheit just before I got into the tent this evening."

After this experience Lindsay came forward with his oil compass which we fixed with brass screws to my sledge. With this one could keep a surprisingly accurate course in the thickest weather, so long as the compass was swung accurately before the march started, to allow for the attraction of metal on the sledge.

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We were travelling in a constant direction, so we swung the compass only for the one bearing, which did not take long. Stephenson still had his own compass to check the course.

When we had been out two weeks we had covered over 200 miles. The dogs were fit, the load was getting lighter; we had climbed over 8,000 feet, and there was no reason why the weather should get worse. This was so encouraging that I increased the rations slightly both for men and dogs, watching the average that we might reduce them again if ever our speed began to fall off. One evening I remarked, "I think we shall reach Ivigtut this month." Lindsay at once answered, "Damn me, I hope we shall get there before that!" He always managed to keep us cheerful.

This first fortnight saw us past the line of Nansen's crossing, and we celebrated the occasion by eating the pot of jam which Courtauld had given us as a parting present. The Ice Cap seemed to slope very steeply to the coast and we had seen very few mountains, so on the 17th we turned direct towards Ivigtut.

On the 20th we found our highest point, 9,200 feet. The weather up here was curious. The temperature varied between zero and freezing-point. The snow was quite smooth, there was little wind, and often the breeze blew from every quarter in the course of the night, veering round in an anti-clockwise direction. We used to start with a nice fine evening: then a layer of clouds, thin but thorough, appeared from nowhere and covered up everything. Soon it began to snow, not in flakes but in separate crystals. This lasted till near morning. Then things improved, and the sun struggled through the clouds just as we were going to bed. There was never any depth of snow, just enough to make the surface sticky. It was annoying, but it failed to prevent us doing our regulation 20 miles.

We started to descend, and when next we felt the wind it was behind us. On the 21st we put up our sails. At the Base we had made square sails of more or less windproof material. These we hoisted on bamboo masts fixed on the front of the

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sledges. Across the top of the sail a yard was sewn, and from each corner ran cords which were attached to the handle-bars. We never had enough wind to make us go really fast, but the sails were enough to relieve the dogs, and cheer them up.

The first night under sail we did 26 miles. It was a hectic form of winter sport. One grasped the handle-bars and was pulled along. The little inequalities of the surface turned one's ski and made them cross or slip under a sledge-runner. I was in terror that I should fall and loose my hold on the sledge, for I knew that if that happened the dogs would run on to Ivigtut without me. It seemed like surf-riding behind a one-man yacht in mid-Atlantic.

As usual, just before we stopped to camp I began to yell and yodel to the dogs. They knew what it meant, and stretched themselves out for a final gallop. They stopped quickly at the word of command, but the sledge swung on and touched the wheelers before it came to rest. Turning, one saw a grand sight. The two other sledges were rushing up, their viking sails bellying in the wind, their sledge-flags flying, and their dogs galloping with open mouths and tails in air. When they arrived they did a sudden swerve to left and right, and came to rest in line. It was a manoeuvre we had practised so that all three sledges should be near the tent. We loosed the dogs and camped, thoroughly pleased with ourselves.

On the 25th, just before camp, we saw a mountain miraged up above the horizon. We camped in a hollow, but next morning we saw it again from the top of a rise, and beside it were a couple of companion peaks. In each hollow we lost them and from each crest we saw more and more of the West Coast mountains unfolded before our eyes. For so long we had pictured this view that its actual appearance thrilled us unreasonably. The dogs saw it too, and hurried forward: poor beasts, they did not realize what it meant for them.

Already there were crevasses, but they were well bridged and did not bother us except as an indication of worse to come. We

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took a latitude, altered our course slightly, and made for what looked like the right gap between the mountains.

July 28th was our last day on the ice. We started at 1.30 in the morning, heading for a solitary peak which we guessed must be near the sea because our map showed nothing but ice at any distance inland. But as we climbed the shoulder of Ice Cap which ran from this mountain, we saw in front of us a great bay of ice, and a low line of hills between us and the distant sea. The mountains between Arsuk and Kungarsuk run 20 miles further inland among the ice than on the map they are shown to do.

We landed on a nunatak and studied the scene with a map and a pair of binoculars. We chose what we thought must be the head of Ivigtut glacier and made towards it. Here there were plenty of crevasses; I prodded a few with an ice-axe, and decided that they were quite full of snow. The hot sun would have thawed mere bridges a month ago.

We lunched when we came to the first water. Stephenson arrived with news of a fly which had settled on his sledge, and Lindsay handed round a feather which he had picked up.

Below the water there was naked ice and open crevasses which the dogs could jump easily. But one-eyed Barmsi fell in; his trace broke and he fell 10 feet to stick where the crevasse narrowed. To save him pain I shot him from above. We went on and at 3.30 shouted "unipok" for the last time.

We halted on a moraine at the head of a dirty little glacial stream which wound boisterously among the hills. But the ice came to a dead end; there was no glacier. So we left the dogs in harness and walked off to find it. For a while we behaved like children revelling in the ubiquity of life, conscious of the din of birds and insects, and enjoying to the full the colour contrasts of mountains, flowers and butterflies. Then, finding ourselves unsuccessful in our search, we became more serious, and divided to prospect in two directions. Stephenson and I found it hard to get a view, but from the top of the fourth hill we saw what we

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wanted. In front of us was the Ivigtut glacier, rough and broken, but apparently possible to cross, and to the right was the fjord. We recognized it almost with a shock because it was so exactly like what we expected it to be. On the map it had seemed like the picture of a Russian boot; from our hill-top it gave us the same idea. We picked out a route to cross the glacier and follow the northern shore of the fjord to Ivigtut. We hurried home and found that Lindsay had prepared dinner.

Then towards midnight came by far the most unpleasant job of all the expedition. In South-West Greenland there are cows and sheep. Huskies and domestic animals cannot live together, and we had been told that we must kill our dogs. Our only consolation was that they did not die hungry; each dog was given 10 lb. of pemmican as a sort of prisoner's breakfast. Afterwards I sat for a while on the moraine and made my peace before crawling into the tent, where there was no privacy. I read Lycidas and went to sleep. We had been busy for twenty-four hours.

Next morning we were up early and walked away along a flowery valley to the glacier. We carried only light pack-loads of our papers, spare footwear, and a little food; and we led Nanok, the sole survivor of the dogs, whom I was determined to bring home to England. He was terrified by the smell of death and glad to get away.

We forded a stream of very cold water, and climbed out on to the glacier. The ice was thawed into needles which were uncomfortable to walk on, so we made for what looked like a central moraine, intending to walk down it towards the sea. But when we reached it we found that it was the top of a wall of rock which held the northern half of the glacier 800 feet above the southern. We had to walk in until the two halves were at the same level. Then we threaded our way among a maze of crevasses and drainage channels, and with some difficulty, but little danger, reached the land on the southern shore. We had some food, and then strode downhill to the sea. Ivigtut glacier must be almost dead although its fall is so steep. There were no large

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glaciers where it reached the sea. We had asked that a boat should be placed here at the beginning of August, but we had done the journey too quickly, and so now we had to walk.

Yesterday we had enjoyed the vegetation, but very soon it began to pall. There were clumps of willows and hazels which reached to our knees and held us back. We shook the bushes and great clouds of insects arose before us. We breathed them, we sneezed them, and swallowed them when we opened our mouths to swear. In time we grew weary and decided to lie down on a brushwood bed during the three darkest hours. We woke up rather cold, and hurried on. Suddenly round a corner we got a view of the mouth of the fjord. The morning sun shone upon Ivigtut and the red paint of our unladen cargo boat. We looked down, and there at our feet was an empty beer bottle! Three hours later we walked into the Settlement, very dirty, very untidy, but glowing with the conscious pride which comes to those who have done something before breakfast. The chief engineer greeted us in pyjamas. Then followed baths, clean clothes, and an abundance of good food and drink in this most up-to-date of Greenland settlements. Already the Ice Cap had become unreal.

Distance Log of Ivigtut journey, measured by sledge-wheel, from observations taken, appeared to be under reading slightly.

July 1/2 15 miles to Big Flag Depôt with light loads.

Day No.	Date July.	Distance.		Total Distances.	Average.
1 . . .	2-3	16.4		16.4	16.4
2 . . .	3-4	20.75		37.1	18.5
3 . . .	4-5	18.4		55.5	18.5
4 . . .	5-6	20		75.5	18.9
5 . . .	6-7	0	(Bad weather)	75.5	15.1
6 . . .	7-8	0	"	75.5	12.6
7 . . .	8-9	14.5		90.1	12.8
8 . . .	9-10	19		109.1	13.6
9 . . .	10-11	15.9		125	13.8
10 . . .	11-12	15.95		140.95	14.09
11 . . .	12-13	11.3	"	152.25	13.84

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Day No.	Date July.	Distance.		Total Distances.	Average.
12 . . .	13-14	0	(Bad weather)	152.25	12.68
13 . . .	14-15	25.5		177.75	13.6
14 . . .	15-16	24		201.75	14.4
15 . . .	16-17	0	(Observations)	201.75	13.4
16 . . .	17-18	10.5		212.25	13.2
17 . . .	18-19	22.65		234.9	13.8
18 . . .	19-20	22.3		257.2	14.29
19 . . .	20-21	22.9		280.1	14.7
20 . . .	21-22	26.1		306.2	15.3
21 . . .	22-23	0	(Observations)	306.2	14.5
22 . . .	23-24	23.5		329.7	15
23 . . .	24-25	25.6		355.3	15.4
24 . . .	25-26	29.5		384.8	16
25 . . .	26-27	21	(Observations)	405.8	16.2
26 . . .	27-28	27		432.8	16.6

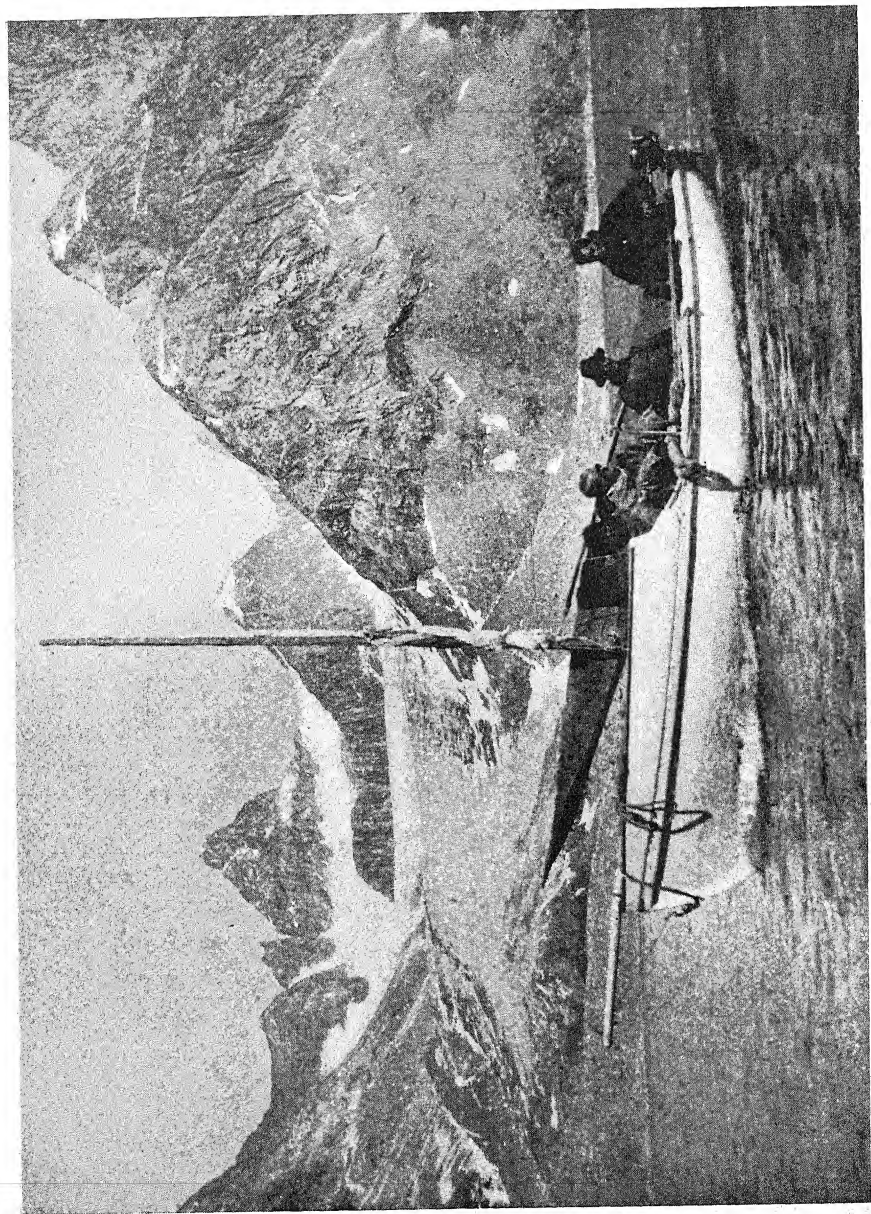
CHAPTER XIV

The Open-Boat Journey

BY CAPTAIN LEMON

A COASTAL survey extending for about a hundred miles south of Angmagssalik formed part of the original expedition plans. Unusually severe gales during the winter and spring, when the normal method of coast travel is by sledge, had made this impossible. The journey had to be done by boat. As soon as the ice broke up in June, and the fjords and coastline were judged sufficiently clear, Courtauld and Rymill set off in a whale-boat from our Base to map as far south as they could in three weeks, and to fix a number of points on which our survey to Imivik could be built up. Bad ice immediately outside our own fjord prevented them moving, and after a fortnight's absence they returned, rather disgusted, with only one point fixed and a few miles of coastline put in. Towards the end of June the ice which had broken out of the bays at the beginning of the month started to clear. As soon as this happened Watkins flew down the coast with D'Aeth, made a preliminary reconnaissance, and took a set of oblique photographs. The date on which our journey could be started depended on the arrival of the annual ship from Copenhagen. The *Gertrud Rask* was bringing us out certain essentials, the most important of which were a new "Sea Horse 3" outboard engine, and a Barr & Stroud range-finder. She was also bringing us out ready mixed fuel in 2-gallon cans, an engine tool kit, spare plugs, ammunition, and many other less important articles.

Sailing dates of the Danish Government vessels are necessarily



THE WHALE-BOAT USED ON THE OPEN BOAT JOURNEY

THE OPEN-BOAT JOURNEY

uncertain owing to ice conditions, but at the time the plans of our journey took shape, it seemed possible that the *Gertrud Rask* might arrive as early as the 28th July, and she was unlikely to be later than the 8th August. By the middle of August (at our Base) new ice starts to form, and each morning large patches of thin ice are seen which have disappeared by ten o'clock, melted by the sun's warmth. With 100 miles of survey ahead, and 700 miles to go, we had decided that August 15th was the last date on which we were justified in starting. The *Gertrud Rask* arrived at Angmagssalik on August 1st, at our Base six days later, and with her the stores that had been ordered from England with one or two exceptions. Even the composition of our party was uncertain until fairly late. Only Watkins was unfettered. At first it was doubtful whether August Courtauld would be able to come, and I had to obtain permission from the War Office. Three was the minimum number with which the journey could be undertaken without undue difficulty, and although four would have been better, the accommodation of the whale-boats was inadequate. The general arrangement of duties was that Watkins should do the hunting (we were to live principally off the country); Courtauld the astronomical observations and boat work; and myself the plane-tabling, wireless, and engine maintenance.

Living off the country caused a certain amount of ribald comment, as it had proved a failure in winter, but whereas in winter we were learning the game, now we had a year's experience behind us. Nor was it a stunt either. The limiting factor in distance was the amount of petrol we could carry, and on a basis of 4 miles to the gallon the supply was enough for about 800 miles. A saving of 200 lb. in weight of food made the difference between the journey being possible or the reverse. Nicodemudgy, the delightful old Eskimo hunter who had helped us so much at our Base during the year we were there, was persuaded to take his family to winter at Umivik, and a small supply of petrol (27 gallons) for us. Preliminary arrangements for his journey caused a good

deal of bother and some amusement. He could not go in his own umiak, he assured us, the skins were too old. He had a friend at Kulusuk, some 60 miles away, from whom he could buy one. Duly towed to Kulusuk he said everything was excellent; five minutes, eighty kroner, his old boat in part exchange, and the transaction was complete. He hardly glanced at his new acquisition. The motor-boat towed him back. Half-way back a jagged ice-cake scraped his boat, and cut a slit a foot long. Water gushed in; the family shrieked, he alone retained his head. Out oars, and a rapid row to a neighbouring floe saved the situation. The umiak, now almost awash, was alongside just in time. The family decanted itself rapidly, and dragged out their possessions as quickly as they could. Here we saw the advantage of the umiak. Ten minutes later his wife had sewn up the hole and they were on their way again. But now misgivings seized the old man. The boat wouldn't steer like his old one; there must be something wrong with it. He said there was. The keel was hopelessly warped, and with a good load it was almost impossible to row. Well, back he had to go, and make another part exchange. Finally he got off three weeks ahead of us with his family and wife (his third), his son, Pitak, his four daughters, his granddaughter, one child of eight that his son-in-law had lent him, two sledges, ten dogs, his tent, and a year's supplies. An Eskimo removal is an imposing sight in this 28-foot boat. It is also a very efficient removal, as one or two members of the expedition found out when they tried to row the thirty or forty odd miles a day that is the usual journey.

He had left well ahead of us in plenty of time to make his winter-house, and do his winter hunting, so we thought. Our own boats were two of the *Quest's* whale-boats, which we had bought from the Captain the year before. In the course of the year they had been used a great deal, and needed doing up before the journey. The larger of them was taken to Angmagssalik and overhauled by the Eskimo carpenter, Yensimil, who had helped Hampton rebuild the aeroplanes in the previous winter.

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He made an excellent job of it, half-decked it level with the second thwart, and made it fairly waterproof. Subsequently Riley and Rymill put in a good many hours completing his work, doing all they could to make the boat as safe as possible for the journey. The larger boat was somewhat optimistically fitted with a mast and lugsail.

Permission was eventually obtained from the Danish Government to sail, but not before Watkins had assured them that we could all "roll our kayaks like the natives" and that no natives were to be taken with us. It is curious how reluctant Governments are to give leave for an undertaking which savours to them of "hara-kiri." The weather, which had been abominable since the beginning of July, suddenly cleared up, and we left our Base on August 15th. Our initial efforts with the two whale-boats, the larger in front, and the smaller in tow, would not have given our critics additional confidence.

To economize petrol we had arranged to tow the smaller boat as far as possible. For that purpose I had made a V rod arrangement to prevent the smaller boat overrunning and damaging the outboard engine. It was a complete failure. No sooner had we started out (we had no opportunity to test it before) than the smaller boat went into violent oscillation, swinging so hard that it pulled the leading boat completely round. An hour later we were a few hundred yards from the Base, and not till then did I discover that I had left the petrol funnel behind. Finally we were under way, with the second boat on a 50-foot rope. It was wonderful weather; a brilliant warm sun and cloudless sky. We went along at a good speed, about 3 miles an hour, picking our way between the countless small floes and ice-cakes that littered the sea. Outside us several miles of pack-ice kept down the swell, and by 9 p.m. we had reached the small settlement at Isortok. We were warmly welcomed by our Eskimo friends, most of whom had been there the previous winter, and had often visited our Base with seals and bear-meat, which we had bought from them. They helped us moor our boats, and shared their evening meal

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of seal-meat with us. The following day we were on our way again, but owing to very bad ice which blocked our way we camped on a small island called Sherneqoy, on the comfortable site of a disused Eskimo house. The normal method of life of the natives in this part of Greenland is semi-nomadic. In summer, after the ice breaks up, the family move out of the winter-house into large seal-skin tents. The roof is removed as the rafters are the summer tent-poles, and also the window-frames and bed-boards. With their possessions in the umiak they row by easy stages from their winter-house, or igloo, towards the trading station. There the skins of the seals, and possibly bears, won during the previous year, are cashed. The money realized is immediately spent to the last kronen, on ammunition, cotton cloth, tobacco, knives, tools, sugar, etc., and possibly a sack of bread or rice. No self-respecting Eskimo would dream of leaving the shop with an öre in his pocket. Nicodemudgy spent the entire day in the shop until his mind became unhinged, and he could think of nothing that he hadn't got. The chief trader has much to contend with, and shows unusual patience. Once the winter stores are bought, the family wend their way down the coast, stopping a day here and a week there as their fancy or their hunting directs. In June and July the large bladder-nosed seal is fairly common a mile or two out to sea, and is much hunted for its skin, which is thick and makes good tents or boot leather. Sometimes they will come to a mussel-bed, and this is an opportunity they make much of. To see a family demolish half a bucket of mussels a head is an interesting sight.

As August approaches they select the site for their winter home, and the women of the family start building up the igloo with earth and stones, finally roofing it over with the tent-poles, seal-skin covers and moss. As a consequence of this mode of life the coast is dotted with disused sites of winter-houses at the mouth of most of the large fjords and islands close to the shore. A fjord, unless a very large one, cannot be hunted for more than one or two winters in succession, as the seals soon desert it.

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At Sherneqoy we were held up for a day by bad ice, but on the next day Watkins, who had climbed up to the highest point, announced that it was clear enough to go ahead, so we started out again. That evening we made Kajartalik, and on the following day the survey was started.

No place could have been more fortunately chosen than Kajartalik as an original base. The view in all directions was unobscured, and the weather glorious. We had estimated a speed of 6 miles of coast a day, and actually we did seven. Our usual routine was to rise early, cook our breakfast of porridge, and plane-table until evening, when the birds that Watkins had shot during the day would be eaten. Eider Duck and Guillemots taste pretty good under these conditions, and the morning meal of porridge washed down with tea gave us the feeling of repletion necessary, or rather desirable, to a person used to a chiefly farinaceous diet.

The country in these regions is barren to an almost incredible degree. Around our base the vegetation would have been described as scanty; a few berries and Alpine flowers growing in small patches of sandy soil deposited beside streams or cracks in the rocks was all there was. On the coast between Isertok and Imivik there is practically nothing. We were soon at Pikudtlek, a settlement now not much used by the Greenlanders. It is an attractive spot, two deep fjords with large glaciers at the head of each. The hunting does not seem particularly good, although bears are said to be fairly numerous, and the Settlement is occasionally cut off from the trading station in winter. We had camped on an island called Pikiutdlida, and had counted on surveying the large fjords in three days, and delivering the letters we had for the natives. After two days' survey we had seen no sign of them, but on the afternoon of the third day we went some 4 miles out of our way and came on their tents hidden round a point.

We had known many of these natives during the winter, and they decided to come from their Settlement and camp with us.

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We still had survey to do, and when their two umiaks left we went off again in the motor-boat to complete the work, as we were due to leave the next day. In the evening, when we got back to camp, we were surprised to find that they had emptied the second whale-boat and were taking all precautions against a storm. Everything was carried under the lee of rocks, and stones were piled on anything that might blow away. A few minutes after we arrived the storm began, and soon a stiff breeze was blowing. Icebergs and brash-ice started streaming out of the fjord. We quickly got our boats in a little cove some 50 yards square, and there we were fairly well protected; but we were up most of the night guarding against possible accident from the large blocks of ice that were heaving about in the little bay. On the following morning the wind had died down, and we wanted to go. The natives assured us that the gale had not finished, and our previous experience had shown us that although they were by no means infallible, they were usually right. We took their advice and stayed. A few hours later the wind was up again, and by noon blowing once more at gale force. Had we gone, we should have regretted it. There was very little pack-ice outside, our boats would have been ground to pieces, and all the floes had been broken up. Four days later the gale subsided, and as far as the eye could reach, the sea was a litter of ice-cakes carried out from the huge fjord, and we were held up until it cleared. Altogether we were nine days at Pikiutdlek before we could get on. The delay was very annoying and tedious.

We set out again in glorious weather to reach Umivik as soon as possible, and for the first part of the journey we had to manœuvre through bad ice. At the end of a 50-foot rope a heavy towed boat is difficult to manage, and we had not been far before there was a heavy bump and Courtauld, in the second boat, shouted that something was wrong. We got the boats alongside, and Watkins started to bail Courtauld's boat as hard as he could with a bucket. I steered both boats for a floe. It was half-full by this time. Courtauld groped about in the bilge, and discovered that

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the bung had got knocked out. He got it back eventually without damage to anything that mattered.

By surveying from 5 a.m., when it was scarcely light, until 6.30 p.m., we reached Umivik at dusk on September 1st. Watkins is possessed of unusually acute senses. Tucked away on a little island the Settlement was hard to find, but suddenly, above the noise of the engine, Watkins said that he heard a dog cry. He was right; a few minutes later we saw the figures running down the rocks to meet us. The family were away hunting, and only two girls and two small children had been left at home. In the completely casual way of the native the hunters had gone away for a couple of days to hunt, and stayed four, leaving the girls, with comparatively little food, to look after themselves. They had built an excellent winter-house, and we soon made ourselves comfortable in it. The evenings were pretty chilly by this time. The following day we started mapping the complicated islands and channels in Umivik Bay, and that night I worked my short-wave wireless to Angmagssalik.

Owing to the short range, Angmagssalik had previously been unable to receive me, but now we were able to work both ways. On the following day the families returned with their umiaks loaded with seals.

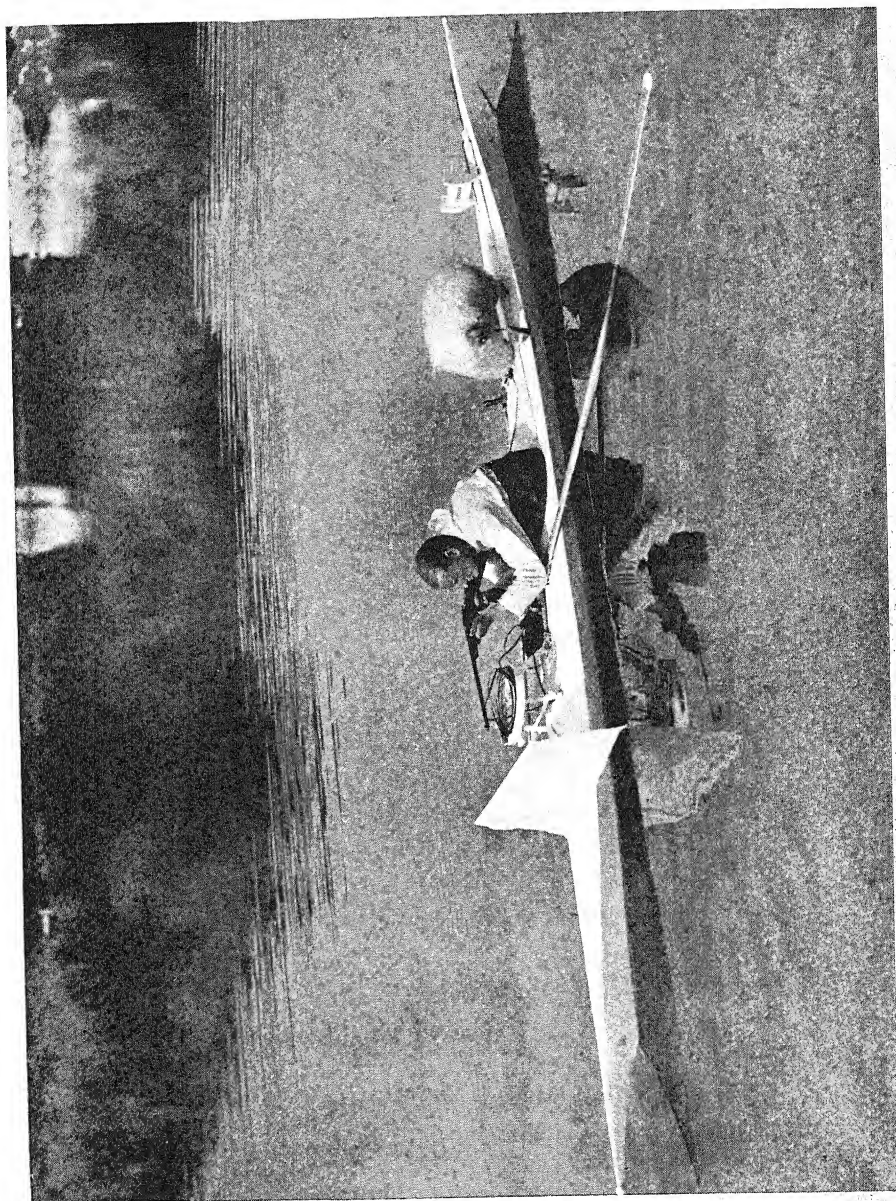
Umivik was the finest place for seals I have ever seen. Watkins got two the first day, and two more the next. He was very keen to get data about the most suitable weapon to use. After a good deal of experiment, he found that a shot-gun at about 30 yards was the most effective. The charge in the heads usually blinds them, and in any case makes them stupid. If they are killed outright in summer they sink at once, and are usually lost (the natives lose about two out of three with their rifles). With the shot-gun, however, the wounded seal comes to the surface, and the hunter can then harpoon it, and finally kill it. The method sounds cruel. To some extent it is, but the struggle does not usually last more than a few minutes, and in any case there is ample justification for it, as one really needs the seal. I may add

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that in the first few hunts, at any rate, the odds are definitely on the seal. The kayak, 17 feet long, and 20 inches broad, is the most efficient craft one can have for the particular purpose, but its instability may be gauged by the fact that many a man has been upset by the recoil of a rifle fired broadside on. Watkins had a narrow shave on our second day at Umivik. He had almost killed a seal, and was just on the point of finishing it off when it suddenly dived. Fortunately he had the end of his paddle through the loop of the bladder which is attached to the hunting-line, but the animal pulled him down till his face and chest were under water, and held him there for some time. I have seen a young Eskimo shoot a seal at 30 yards, paddle rapidly up to it, and seize it by the flipper while it struggled violently in the water till it died. It is not surprising that the death-rate among the Eskimos between the ages of 18 and 25 is the highest in the world.

Three more days in the complicated channels, camping among the outer islands, completed what we had undertaken to map. It was during this time that Watkins killed his first large seal, a giant bearded creature that weighed perhaps 600 lb. Meanwhile August Courtauld had spent much time making careful observations, and we rose at 5 a.m. on September 8th to leave. Our work was at an end. We said farewell to the natives, who rowed slowly away in the umiak under the shadow of the great twin peak, Kililar. The large red streak that runs from its summit into the water makes its symmetry even more striking.

Between us and the first settlement in West Greenland lay 350 miles of uninhabited coast—seven days' travelling perhaps, if all went well. The previous summer had been exceptionally fine, and had remained so with one short rainy spell until September 28th. The engines were going well, they had been well looked over at Umivik, and ten days to complete our journey did not seem unduly optimistic. One day's travel by motor-boat in ice is very like another, so there is no need to describe it. There was practically no pack-ice out to sea, and we were now using both boats, each with its motor, and travelling as fast as we could.



WATKINS SEAL HUNTING

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The coast is exceptionally beautiful, much broken up by small islands, and channels; and vegetation, between Umivik and Tingmiarmiut, is fairly prolific.

A hundred years before us a Danish explorer, Graah, had travelled up the coast and wintered at the back of a small island, Imersiak. His choice was fortunate. Sheltered from both the sea and Ice Cap winds, low mossy slopes and fjords behind make this place as good as any on the coast. For us it has other memories. That night our new engine stopped with a partial seizure, and restarted with difficulty. There was apparently nothing wrong with it, and at dusk we could only turn in and hope that it would work better in the morning. During the night the weather changed. Outside we could hear the sea breaking, and at dawn it was still raining hard. For two hours the "Sea Horse 4" refused, and finally Courtauld managed to get the "Sea Horse 3" to go. We had been warned by natives that at Akornorniarmiut Island the sea is rough. The umiak, excellent in ice, is a bad sea boat, and we looked on the place as something of an obstacle, knowing the natives often row round the back of the island in preference to making the short passage along the coast. It adds about 60 miles to the journey. The position was now reversed. Courtauld, in the smaller boat with the old engine, was towing us for the first time, and Watkins and I were taking it in turns to steer. Our progress was very slow, and our overloaded boats wallowed in the choppy sea. I was on my second turn steering when we had got about two miles outside the shelter of the islands and three from the fjord. The swell had increased considerably, and there was a strong wind. The *Narwhal*, as we called our larger boat, was slopping some water over the side, and I could see that Courtauld's boat was taking water on board too, but I could not gauge how much. Watkins was dozing under the fore deck, sheltering from the weather. About a mile further on he woke up, and after a short consultation we decided that we had better go back. At that moment Courtauld's engine stopped in a decided fashion, and he started the necessary repairs. Our petrol

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had been sent out in 4-gallon continental cans, with funnel-shaped spouts for pouring. The order for 2-gallon cans with covered spout had been disregarded. Dirt and moisture inevitably collected in spouts, and that process had been happening gradually. Courtauld wrestled with the engine, and after some time called out that "someone must come in and bail." Watkins quickly got in his boat, and found it over half-full of water. He said afterwards it was taking in a bucketfull at each roll, and he thought it might fill completely at any moment. Ensuing events were somewhat hectic. The prospect of the engine going seemed small. We were drifting slowly but surely on to a large iceberg, against which the sea was breaking, with a sheer lee shore a quarter of a mile beyond. Neither boat was in a fit condition to row. Courtauld's boat, besides the petrol and other gear, had two kayaks on board, while the *Narwhal* had Watkins's kayak, as well as a large quantity of seal-meat and fat, on which we were living. Watkins bailed hard; Courtauld, unmoved, knee-deep in water, undid the sparking plugs and carburettors with which we were by this time too familiar. I busied myself getting the *Narwhal* into something like rowable condition. Watkins's kayak was got overboard, when it promptly turned over and swam upside down. I threw all the seal-meat and fat that had come adrift overboard, and eventually made it possible to get out two oars. After what seemed hours Courtauld induced his engine to go somehow, and with some relief we made back to the fjord behind Skoldungens Island. We were uncertain where to make for as there was every reason to get in somewhere quickly. The old "Sea Horse" on one cylinder took us back the three odd miles at snail's pace, and eventually stopped for petrol. A wave over the stern stopped any faint possibility of it restarting, and eventually we rowed to a little cove, perhaps half a mile away.

I afterwards took part of the engine down. Exactly why it worked was then a deeper mystery than ever. The filter of the carburettor was over half-full of water and sand; one plug was completely oiled up, and the washer from the other had

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disappeared. Looking back there is no doubt that we had mismanaged things, both to be at sea with the engines working so badly, and with the boats so unseaworthy. We had not been in a bad swell before, and we learned a good deal from it. I asked Courtauld afterwards why he did not signal to turn back sooner, as his boat was taking so much water, and he replied that he was not going to turn back without orders. If we had lost one boat we should have been forced to winter, as we should have lost our petrol. For this we had adequate equipment, but the locality was scarcely one we should have chosen. In this same storm, Dr. Rasmussen's little ship was carried 150 miles out to sea and lost her rudder.

A sandy beach is a rarity in Greenland, but curiously enough this little haven had one. We were therefore able to pull up our boats and camp on some near-by shingle in the shelter of a large rock. For three days it rained in torrents, water streamed through our tent and under our beds in little streams. Although this decreased our comfort, it saved us going outside for water.

We lay up here for four days, and during this time when it was fine enough I made good the stern of the *Narwhal*. It had split across somehow, and had to be repaired and altered to take either engine. During the spells when the rain stopped we tinkered at the engines, and eventually both showed signs of life, but not before we had sent a message back that we might, owing to engine trouble, be forced to cross the Ice Cap to Igaliko in West Greenland, or winter on the coast. The wireless receiver had been put out of action by the water. In addition to our other troubles, during the night we were caught by a spring tide heaped up by wind, which turned the *Narwhal* round and grounded the stern. The contents of the bilge then ran up into the bows and soaked wireless set, porridge, rucksacks, and nearly everything else. Here Courtauld made the last of his suet puddings. It was a curious pudding, judged by home standards. Porridge, suet, and black crowberries were the constituents, but my diary entry describes it as most palatable. I have since been asked by an

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authority on Polar exploration what sort of a cook Courtauld is. He seemed entirely satisfied when I described him as very willing. He was handicapped. The petrol, unmixed with oil, which was set aside for cooking, had run out, and instead we were using the engine fuel. The great trouble with oily petrol is that the petrol vaporizes and the oil does not, but gradually accumulates in the tubes and burner, when the stove either refuses altogether or sends up a sheet of flame which fires the tent.

We had heard that Knud Rasmussen was making a journey from West Greenland to Angmagssalik, and had much looked forward to meeting him. Watkins, in particular, was anxious to see him, as he is the only man who has penetrated into Baffin Land. At that time plans for an expedition round the Arctic were occupying Watkins's mind, and this was an opportunity for discussing them with one of the two greatest Arctic travellers. We also suspected that, after the manner of Danish explorers, he would have plenty of luxurious food. We could have done with some.

The theory of many experienced explorers is to run out of anything that may be placed in the category of non-essential as early as possible. I used to dispute this, arguing that rationing was essential. I was completely wrong. Courtauld said he had found that it worked better to eat just what you wanted until it ran out, and a couple of days afterwards you had forgotten all about it. Having tried both methods, I am inclined to agree with him; anyway, I would not bother about rationing myself, provided always that we had enough. Watkins is a staunch supporter of the non-rationing system. Completely indifferent to what he eats, he invariably pronounces the particular piece of meat in front of him excellent. Even the whale-meat at the Faroes on the journey out was described as the best meat in the world.

On the evening of the fourth day at Akornorniarmiut Watkins heard a motor-boat, and ran up to the top of the large rock which sheltered our haven from the sea. He went up the rock in what must be record time, but it was steep and perhaps 200 feet high.

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He arrived just as the boat was too far away to be seen clearly, and although he lit a rag soaked in oil, he could not attract their attention. The light was seen by one of the Eskimos on board, but when he told the others, they could not see it themselves and doubted him. On the sixth day we were able to leave and went on through the islands past the salmon river at Uvivak to Tingmiarmiut. With the exception of Ikermiut, 20 miles further south, where one family sometimes winters, this is the most southerly settlement in regular use by the natives.

We had two days' excellent run and reached Tingmiarmiut on September 18th. Natives had told us that when we reached this place there would be no pack-ice, and that the weather was never stormy like it is higher up the coast. We were therefore surprised to find horses' tails blowing from the glaciers, the usual herald of a gale.

The journey in behind the islands between Akornorniarmiut and Tingmiarmiut had been very beautiful. With the exception of Angmagssalik Island, the harbour of which rivals the beauty of St. Moritz, this is the best part of the coast. It is in fairly regular use by several Eskimo families, but was uninhabited when we were there. The increasing wind soon made the fjord too choppy to be comfortable, so we camped in a small cove behind a disused settlement. We were pitching our tents and mooring our boats, when a fjord seal popped his head out of the water and, filled with curiosity, examined us carefully. Presently he was joined by another, and later by a third. We were not in need of meat so did not hunt them, but they stayed close to our camp for some hours that evening, and again visited us the following day.

As the district had not been hunted for at least two years there were many seals of all varieties. We were held up there for a day owing to bad weather, and much ice that was driven out from the large glaciers behind the islands. But the second night we were there we had a mild surprise. At about two in the morning Watkins, who is a very light sleeper, suddenly woke me up with "There's a bear outside; have you your revolver?" I

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asked him what he was going to do about it; after all, he was the hunter. We had nothing on shore except a shot-gun lying outside between our tent and the sea. Suddenly the tent started to flap furiously with the wind, and we waited, half-expecting the tent would be knocked from over our heads. After about a minute Watkins said, "He has gone away." Cautiously Watkins looked out of the tent, but there was no sign of him. I had then, and still have, a very open mind as to whether there was actually a bear there or not!

Watkins is one of those rare people who can put head to pillow and be instantly asleep. He rests thoroughly, but is at once awake if only his name is mentioned quietly. This peculiar alertness is almost a sixth sense. We were soon asleep again, this time with the shot-gun inside the tent, but we were breakfasting at 3 a.m. anyway, so the night was somewhat disturbed.

The following day we moved to Ikermiut, which lies 12 miles further south, and is occasionally used by a native named Iskiak, the Greenlanders' rendering of Isaiah. Most of them have biblical names, but some years ago the stock-in-trade of the half-caste minister at Angmagssalik ran rather low, so now they are christened from a Copenhagen telephone directory.

For many hundred years, the exact time is still an ethnological puzzle, the Angmagssalik district Eskimos have formed a race apart. Periodically, perhaps every three or four years, they would journey down the coast to Auarket to meet their cousins from the West Coast and trade with them. The dominion of these latter usually extended as far north as Anoritek, but occasionally they wintered as far north as Akornorniarmiut. There was some kind of market at Auarket where exchanges of goods took place. Here the ivory of the walrus and Narwhal was bartered for the goods of the West Greenlander, who with his largely ice-free coast has been in regular touch with civilization for the last 200 years. Tobacco was in great demand, and the East Greenlander would take considerable risks to get it. There is one place on the coast of which they stood in some dread—the great glacier of

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Puisortok. Travelling in early summer in their umiaks, they necessarily hug the coast, and utilize the narrow leads that exist between the pack-ice and the glacier. The literal meaning of the name is "the thing that comes up," as this peculiar glacier often calves by huge pieces breaking off under water, which come to the top and shoot like breaching whales into the air. Instant destruction is the penalty for misjudgment or mere bad luck.

I remember an old hunter saying: "Do not speak, do not eat, until Puisortok is passed"; and this was the next obstacle on our route. We lay up on the little island of Nagtoralik, waiting for favourable weather to do this bound. The weather was pretty unpleasant; there was much swell outside, and a considerable quantity of ice which streams out of the huge fjord just below Tingmiarmiut. Our first attempt to pass Puisortok was hardly inspiring. The engine, now going worse than ever, conked out, and we rowed into a little cove at Kasingortok. It was perhaps a hundred yards long by thirty broad. The rocks were almost sheer out of the sea for 10 or 12 feet, and our boat, now leaking freely from the many collisions against floes, was moored in an indifferent place. We were camping in a little mossy bank, perched up above the water, and from time to time one of us would go down to examine the boat and to bail. During one of our absences the stern rope chafed through, and the *Narwhal* pounded against the rocks for some time. When next examined she was badly damaged. Two planks were split across, the stern was cracked, and she was full of water.

We had to take two-hour shifts and bail continuously, and we decided we should have to make back to Nagtoralik and repair it properly. It rained incessantly and we cut two pieces off the floor-boards, and after much labour made a fairly strong job of it. The floor-boards were very difficult to cut as they were soaked through, but eventually we managed to get through them with a padsaw lubricated with soap. The plates were torn off the sides, and the stern plate had also gone. We made it good as best we could, and again set off to make the 60 miles to Anoritok, as soon

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as the weather permitted. The ice stretched out to sea for miles, and for three hours we followed it out, hoping to round it and get on. The weather turned worse, and as the ice stretched out to sea as far as the eye could see we turned back again. Our two failures depressed us. My patience was now completely exhausted at the miserable performance of the engine, and I was beginning to wish that it would pack up altogether.

Many times a day the carburettor, a mass of small tubes, was taken down, and do what we would it seemed impossible to avoid stoppages. We took it in turns to pull the string starter, until eventually it would go. In no circumstances, then, did we stop it, fuel was administered every half-hour from a teapot, one of us leaning over the stern while another steered. It was here that Watkins had one of the most unpleasant experiences of the journey. Camped on our mossy bank, the rain welled up in a hollow in the middle of the floor, and Watkins awoke with his sleeping-bag soaked through in water. It had welled up to his chin. He took it wonderfully, and at night we moved our camp in drizzling rain on to some stones higher up. Moss is always a dangerous camping-ground if there is a risk of rain, as it soon becomes waterlogged and impossible. The alternative is stone shingle, usually of boulders as large as oranges, so naturally one is tempted to risk the moss.

The incident, unimportant in itself, did not cheer us up at all. It was again questionable whether we should make our destination or not. We had long since had our first snow, and it was doubtful what it was to do. We had three alternatives: either to walk across the Ice Cap; to go on; or to winter.

To cross the Ice Cap here, in fact anywhere south of Tingmiarmiut, is impracticable; the coast mountains are too serious an obstacle, and we had had ample experience of the Ice Cap in October. To go on was risky, as the coast between Puisortok and Iluilek is about as unprepossessing a place as could be. There is practically no land; the fjords are narrow and ice-infested, and there is practically no shelter. If we were to winter, then,

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Tingmiarmiut was the obvious place, as game abounds there and berries are prolific to profusion. To winter between Tingmiarmiut and Iluilek was asking for trouble; there were records of an Eskimo family who had tried to do so having starved to death. We therefore decided, unless we could get past Puisortok within fourteen days, to winter on the coast.

We made our third attempt and half a mile from the camp the engine stopped. All the usual efforts were made to start it, and eventually my arms were so tired I had to give it up. Although I couldn't start it myself, I felt certain that it would go, and I said so. Watkins gave two violent pulls, and away it went. We travelled all through the day, and at evening made Anoritok in the dark with a storm brewing. Map reading, at no time easy, was almost impossible in the dark. All the little bays we wanted to get into were blocked with ice, and finally we were lucky to get on to a tiny island near the shore. Here the weather again became bad, and on the following day the engine refused quite definitely to start. I told Watkins that I would definitely have to take it down. I strongly suspected a blocked-up silencer, but there was no easy way of cleaning it. The nuts were all of duralumin, and after two hours I had to give it up and tell the others that it would take me a week to file up the necessary spanners to fit the nuts. It seemed better to tackle the "Sea Horse 3" to see if it would work. All the ignition had to be taken down, and after hours of work it was eventually induced to go. Meanwhile Courtauld, working on the clue of the blocked-up silencer, examined the "Sea Horse 4." Suddenly I heard the engine going well. He had found a port which exhausted into the atmosphere direct from the cylinder. I had taken it for a water-jacket drain, and hadn't bothered about it. Nothing could have been stupider, and I was very annoyed with myself for not having spotted this. Next day we made off again, and went on a further 50 miles till we happened on a party of three Norwegians in a curious way. We had expected to fall in with Rasmussen's party somewhere on the coast, but when we saw three men in a small whale-boat near the

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entrance of a fjord, we were amazed. It was a party of hunters sent to hunt for fur and bears there. A fine old sailorman, Mortensen, was in charge, and he did everything in his power for us. Our boat had been leaking so badly that we were almost continuously bailing. The stern was now in such a bad condition that a good bump against a heavy ice-cake would have broken it to pieces, as it was worn level with the front of the planking. He at once set to work to make it good. He was an excellent carpenter, and nothing would take him away from the job until he had made it as sound as he possibly could. The worst places were re-caulked and ice-plates were fitted on the whole bars. Their little hut was a welcome change for us after our tents, and we were able to have the first smoke for days. Tobacco had given out ages before; finally, we had resorted to tea. Even that had eventually been dropped in the bottom of the boat. Bread too we had, and jam, and sugar. The going without those things seemed repaid a hundred-fold. They begged us to spend the winter with them, as they were lonely and homesick. They were expecting the boat to pick them up next year, they told us. It certainly was a depressing place, this narrow fjord, now covered with new ice, but they treated us with such kindness during our short stay that it seemed ungrateful to leave them.

From here on the journey was uneventful until suddenly at the entrance to Prince Christian Sound we came on a native house. These were the first West Greenland Eskimos. We were at once impressed by the tremendous difference between them and the people we had left. The curious mixture of native and European clothing, together with the atmosphere of degeneration, at once struck us. There is no comparison between these people and the Angmagssalik Eskimo. They gave us news of Knud Rasmussen, now a day ahead of us on his return journey from Angmagssalik, and we hurried through Prince Christian's Sound.

This curious fjord cuts off the southern end of Greenland from the mainland, and really consists of several waterways which join up at the small Settlement of Augpaulagtok. Here the new ice

THE OPEN-BOAT JOURNEY

was a good inch thick, and we eventually had to abandon our attempted non-stop journey through the still water of the fjord. We were overdue, and were hurrying more than usual. Our petrol supply was now reduced to a single canister, and we were dependent on the supply that the Danish authorities had arranged for us at Augpaulagtok. We arrived there in the morning and received the warm welcome always awarded to strangers by the hospitable Danes.

After some delay the petrol was produced, and we at once opened the can to examine the contents. A single sniff was enough—more than enough. It was paraffin! The confusion between English “petrol” and Danish “petroleum” seems inevitable. Probably the solution is to use the American term “gasoline,” but that suggestion is offered with the greatest diffidence. Thence we were escorted to Nanortalik by a native guide, who was only too proud to steer our engine. For some miles we tried to run on a half-and-half mixture of petrol and paraffin, but the “Sea Horse 3” wouldn’t take it. As our destination was Julianehaab, we were very loath to try it in the “Sea Horse 4,” which, after Courtauld’s repair, had run perfectly.

The south-west coast of Greenland is completely different in character to the other side. At Narsak, the end of our day’s journey, we saw the first grass field and sheep grazing in it. The country-side here resembles the south-west coast of Ireland. The climate is much milder, with frequent rain and mist. The journey to Nanortalik was entirely uneventful, and we reached it on the following day with one gallon of petrol to spare. Here we were warmly welcomed by Knud Rasmussen, by the Governor of South Greenland, Herr Malinquist, and many others. Dr. Rasmussen was contemplating coming round the coast to try and find us. The risk would have been considerable, but he was willing to take it. Fortunately it was unnecessary.

CHAPTER XV

The Holsteinborg Crossing

IT was part of the original scheme of the expedition to find out as much as possible about the height and meteorological conditions of the interior of Greenland. The Northern journey from the Ice Cap Station up the centre of the Ice Cap had been found impracticable, and the corresponding Southern journey which Watkins had hoped would extend as far south as Nansen's Crossing had been curtailed by the unexpectedly bad weather. With great difficulty a point only 95 miles south of the Ice Cap Station had been reached. Watkins therefore decided that Rymill and I should sledge straight across the Ice Cap to Holsteinborg on the West Coast, and return to England from there. A series of aneroid heights and meteorological observations would be taken on the way across; and when the party reached the 100-mile-wide belt of land separating the Ice Cap from the sea, the value of the kayak would again be demonstrated for we would descend the whole length of Søndre Stromfjord in kayaks, hunting seals for food on the way. The kayaks would, of course, have to be carried right across the Ice Cap on specially built frames above the sledges; but as long as we could stop the dogs devouring them this should not be impossible. It might be difficult to convey the kayaks from the point on the crevassed edge of the Ice Cap, at which the sledges would have to be abandoned, to the beginning of the fjord; but a connecting series of lakes and rivers roughly indicated on the map would help to bridge this gap.

Unfortunately a swollen gland on my neck which I had developed in May had been increasing in size ever since, and prevented my being one of the party. Rymill and Hampton were chosen

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for the journey. They should have started in July, at the same time as Scott's crossing to Ivigtut, but the supply of dog pemmican was running short and there were no sound sledges left. So they were forced to wait till the *Gertrud Rask* came in, bringing new sledges and more pemmican.

We had hoped that the *Gertrud Rask* would be at Angmagssalik well before the end of July, but owing to bad ice conditions north of Cape Dan she was not there till August 4th. The larger whale-boat had been sent to Angmagssalik to bring back at once the supplies for this journey, so that by the time the ship reached our Base the party could be well on their way. But we had not reckoned with the ice. Riley, who was in charge of the boat-party, left Angmagssalik on August 4th, but he found that impenetrable pack-ice round the southern point of the island prevented the boat coming straight across to Sermilik and he was forced to go right round behind the island. Owing to a persistent inshore wind, Sermilik Fjord itself was chock-full of ice and impossible to cross. Accordingly several days were spent in nosing down the eastern shores of the fjord, laboriously following every curve of the land. No risks could be taken, as it was essential that the boat should not be damaged, since Watkins was depending on it for his 600-mile boat-journey to Julianehaab.

After further delay due to intermittent fog, Riley at last reached the mouth of Sermilik Fjord only to hear the syren of the *Gertrud Rask* far out to sea. Apparently his journey was in vain: the ship would reach the Base before him. In thick fog he attempted to run the gauntlet of the large bergs and floes which were being continually jostled to and fro by the powerful current at the mouth of the fjord. Aided by a couple of Eskimos who led the way in their kayaks, he successfully reached the further shore and late that night reached the Base, about six hours after the *Gertrud Rask*. It had taken him five days to do a journey usually accomplished in about eight hours. Thus it was not till August 13th that Rymill and Hampton eventually left the Base, with the boat-journey party and a few Eskimos to help them to get

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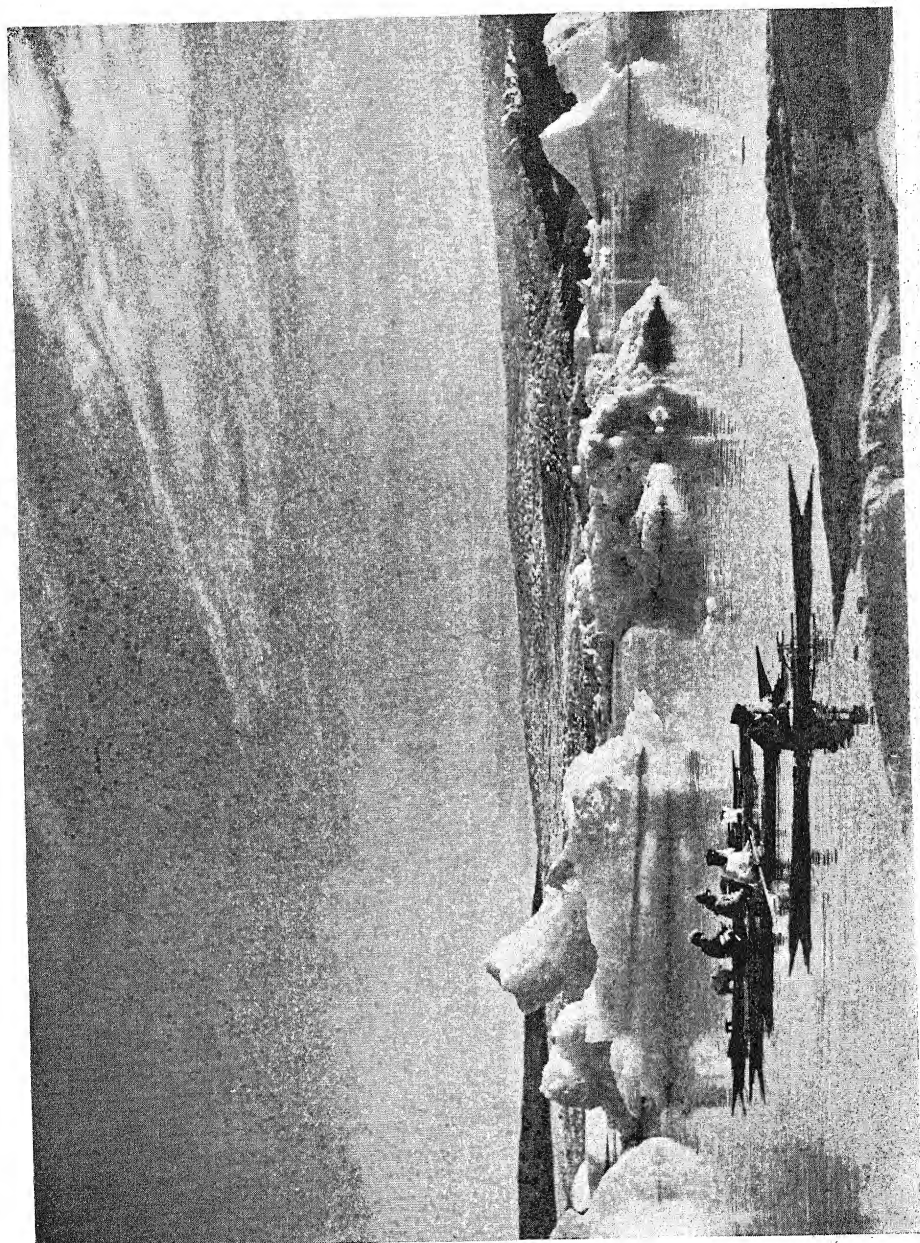
their loads up to the glacier-foot. They hoped to reach Holsteinborg in about six weeks' time. They took dog food for their two teams of ten dogs each, for five weeks, and man food for a similar length of time; though the latter could be made to last twice that time if necessary.

It rained most of the following day, but in the evening they put another coat of white paint on their kayaks to make them less appetizing to the dogs, and finished fixing the racks, at the front and back of the sledges, which would support the kayaks. The dogs, after months of inactivity and good living off salmon and fresh seal-meat, were almost too fat to walk.

The warm weather had now melted most of the snow off the lower slopes of the glacier, baring the rough ice so that it was quite impossible to start off with full loads. They therefore decided first to get the 700 lb. of dog pemmican as far on as possible, using Eskimo hard-runner sledges which could then be abandoned. Subsequently they would bring on their new sledges and camping gear, pick up the dog food, and with full loads push on to the Big Flag Depôt where their ration boxes had been since February.

Unfortunately the going was much worse than they had expected. Bugbear was so smooth and slippery that the dogs could get no grip and loads of only a hundred pounds or so could be taken up. The configuration of the Ice Cap, too, had changed. Only a few miles after Bugbear Bank, in a stretch of hummocky going which had hitherto been free from dangers, the leading six dogs of Hampton's team suddenly disappeared howling and struggling down a hidden hole in the ice. This cavity was about 6 feet square and of considerable depth. They just prevented the sledge from following, and the remaining dogs were immediately cut loose. Rymill was then lowered down the hole on a rope to free the dogs so that they could be hauled up one by one. Luckily all the harnesses held and none of the dogs was any the worse for the sudden drop.

Owing to the excessively rough going one of the new sledges had already completely given way, and this had to be relashed



OUR ESKIMO FRIENDS LEAVE FOR HOME

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before they could continue. However, that day they safely crossed the large crevasses with surprising ease, still relaying with only half-loads.

In the valley between the two lots of crevasses they found slush, rivers and lakes; but in spite of getting very wet they reached the far crevasses by evening. These were more open than usual and a new way through had to be found. The normal teams of seven had been augmented by any odd dogs available, and this made the sledges somewhat unmanageable. While retracing their steps through the crevasses to follow a better route which they had found, Rymill's team suddenly decided there was more comfortable going on the left. Before he could stop or turn them they had swung his fully loaded sledge sideways into a wide and apparently bottomless crevasse. By a lucky chance the sledge caught on a small ledge and jammed, so that they were able to rescue the load bit by bit and eventually haul out the sledge.

Next day they found a better way through, and after some intricate sledge manœuvres started up the long bluff at the top of which lay the Big Flag Dépôt. Soon, however, they were stopped by more numerous and greater crevasses, and after spending several hours searching for a possible way through were forced to go round and approach the Big Flag from the south-west, picking a devious course through many crevassed areas.

They had been rather worried latterly by the changed aspect of the country, and their fears were realized that day when, after a search of many hours in wet snow, they were unable to find any sign of the dépôt. It seemed quite possible that it might have disappeared entirely down one of the newly formed crevasses. Not anticipating such bad going, they had left the Base with only a few biscuits and the remains of a suet pudding, and by now, having been away a week, were pretty hungry. Moreover if they were unable to find the Big Flag, where lay all their food for the journey, they would have to return ignominiously to the Base and wait with the Eskimos for the Danish ship to return the following summer.

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On August 20th they studied maps and worked out the back-bearings of the depôt from the still visible coastal mountains. Suddenly they saw something on the ice about a mile distant, and on examining it with the field-glasses it turned out to be food, though not quite in the form they expected it. Their glasses showed them a large Polar bear moving rapidly south and carefully picking his way through the crevasses. Little could be gained—and all might be lost down a crevasse—by hunting him, so they continued their search for the Big Flag. In the morning, to their immense relief, they suddenly found it on a strip of ice so sunken between two large crevasses that it was invisible from more than 30 yards.

It seemed better to travel by night now, as the surface would then be much harder. So after spending the morning repairing sledges and dog-harnesses they prepared to start at ten in the evening. They had loads of as much as 800 lb. per sledge, but with ten very strong dogs each they could reasonably hope to keep up a high average mileage. The kayaks were supported out of reach of the dogs on racks a few inches clear of the loads. So good was the hard night surface that the dogs were soon trotting along at about 15 miles an hour, but at this speed rushing among obscure crevasses in the twilight seemed too dangerous. So they stopped to pitch their tent and waited till three in the morning. The going was still very good however, and by midday, after less than seven hours of actual travelling, they had done 28 miles, an expedition record for a fully loaded sledge. For the next ten days they averaged about 24 miles a day, in variable weather. Sometimes they would get icy winds with zero temperatures; while occasionally several inches of snow would fall, accompanied by warmish weather, causing the snow to congeal on the runners. For two days together they had to lie up owing to drifting snow: otherwise they were not troubled much by the wind.

For navigation a P.4. liquid compass from one of the aeroplanes was mounted on a reindeer-skin and fixed above the kayak on the leading sledge. The movable card was clamped to the required course, so that any deviation from it would at once be

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obvious. This proved to be an extremely efficient and simple method of navigation. Every five days a meridian altitude observation for latitude was taken as a check on the course. Both Rymill and Hampton travelled on skis with winter bindings and moccasins. The surface was uniformly good, though soft snow in the centre of the Ice Cap caused rather slower speeds; however, the loads were lighter by then and the dogs continued to pull magnificently.

By the end of the month they were descending about 1,000 feet per day. The wind was behind them now, about south-east, and on September 2nd they were much excited to see two young gulls (either Glaucous or Iceland Gulls) flying round the sledges and returning westward towards the land. On the following day they descended into undulating country with frozen lakes in the hollows and bare wind-swept ice on the ridges. On the afternoon of September 4th, away on the south-western horizon, a dancing black line appeared, which was the refracted image of the West Coast mountains. Though it was less than a fortnight since the somewhat sad moment when the well-known mountains round the Base had slowly disappeared below the eastern horizon, the men, as well as the dogs, were already finding the white monotony of the Ice Cap not a little irksome, and it was good to see land once more. Not long afterwards the first crevasse on this side was crossed; and subsequently the summit of almost every ridge had to be treated with great respect. Before nightfall on this eventful day further ranges of mountains appeared on their left, so that they hoped on the morrow to see, straight ahead of them, the nunatak for which they were navigating. They had less than 40 miles to go now before they could abandon their sledges and take to kayaks, yet it was to take them longer to cover that 40 miles than the 300 they had already sledged.

Although they succeeded in covering 17 miles the next day, the conditions were rapidly deteriorating. Steeply undulating country was found with crevasses on the ridges and frozen rivers and lakes in the hollows. It was hazardous work guiding the sledges, which shot about uncontrollably on the hard icy surface

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from which all the snow had been swept by the prevailing winds. This glassy surface was cutting the dogs' feet terribly as well as damaging the sledges. Some of the ridges were so badly crevassed that laborious detours had to be made. On one such occasion Rymill's sledge slid down a crevasse, but luckily it jammed as before, and nothing was lost.

On September 6th, after topping one of these ridges, new land was disclosed much nearer than was expected. But there was still another ridge hiding the actual descent from the Ice Cap, and the descent itself might be impassable at that point. Rain in the night had not only made the surface still more unpleasant but had weakened the ice on the lakes. Rymill's sledge on this day had almost got across a large frozen lake when it suddenly broke through, and falling sideways was submerged in 3 feet of water. Luckily most of the food was on the other sledge, and though all Rymill's clothes and bedding were wet no serious damage was done. Hampton had to take his sledge several miles round to avoid this obstruction, and frequently went through up to his knees. However he at last reached Rymill and together they rescued the shivering dogs and the sodden load. They had covered only 5 miles when camp had to be pitched for things to dry.

On that day several Snow Buntings appeared twittering round the sledges. They produced the same cheerful effect as upon Nansen, over forty years before, when he too was approaching these West Coast mountains, after crossing the Ice Cap for the first time. As the surface looked even worse ahead, Rymill decided that a day would be wisely spent in making boots for the dogs, who were almost unable to pull owing to the terrible state of their feet. For this purpose old kit-bags and any spare clothes were utilized, and by evening, though the sewing may not have been up to the Eskimo standard, twenty efficient sets of dog-boots were ready.

Soon after setting out the following day, on even rougher going, Hampton's sledge got out of control down an exceptionally steep ridge, and leaping over a river nose-dived into the opposite bank.

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When it had been dug out one runner was found to be broken. Soon after this had been repaired further progress was stopped by a deep river about 40 feet wide. Eventually a comparatively shallow place was found where the current was not too powerful, and they set to work at once carrying the loads across a box at a time. The water came almost up to their waists. As the bottom was so slippery and the current so strong, diminutive steps had to be taken and each crossing seemed interminable. About twenty such journeys had to be made, and by the time they were ready to get the dogs over they were shaking so with cold that they could hardly help laughing at each other in spite of the pain. On top of this the sun now set and a bitter wind rose. Each dog was tied to the centre of a long rope and hauled across.

For several days now they had been much harassed by water-holes thinly frozen over and covered with snow, which were completely invisible until trodden upon. Quite often they would sink in these to well above the knee. On the 9th another river covered with a fickle layer of ice confronted them, but by lying full length on the ice and wriggling across they safely reached the further shore, although the water welled through as they passed. Luckily the other rivers were firmly frozen, so that in spite of such unexpected obstacles nearly 3 miles were covered. In the evening while Hampton was repairing his sledge, which had broken down again, Rymill walked on to the summit of the next ridge and from there could see the line where the Ice Cap met the land. The going ahead looked terribly cut up and ridged, but at any rate seemed fairly clear of big rivers. They thought they might have to abandon the sledges and pack their kayaks and equipment for the rest of the way, which would have been a most laborious proceeding, as the ridges were so steep that many of them had to be ascended on all fours. Finally they decided to abandon one sledge, and with a bare minimum of equipment and food on the remaining sledge to push on for land, which now was close enough for them to distinguish details and enticing shadows. At

this stage came the tragic necessity of disposing of one of the teams. It was realized when the journey was planned that this was inevitable, for it would be quite impossible to get the dogs down to the Eskimo settlements at the mouth of Søndre Stromfjord, while to leave them at large on the Ice Cap would be still more cruel. This was done as humanely as possible with a .22 rifle; though it is heart-rending to deal in this way with friends that have served one so well.

Soon the weather got worse again: strong winds accompanied by driving rain alternating with snow. Owing to the thaw the bedding, especially the reindeer-skins, was completely saturated. On the 12th, after doing 2 miles with the single sledge, rain reminiscent of England descended in torrents and rushing streams surrounded the tent. This continued till the middle of the following day, when they decided to carry the kayaks as far on as possible before dark. The dogs were getting very hungry now in spite of full rations, and if they were to damage the kayaks the position would be extremely serious. The kayaks were left on the summit of a ridge about 3 miles on: then, as a heavy fog had rapidly developed, they turned back to the camp, which luckily they were able to find without difficulty.

Hampton's climbing-boots had completely given out, and for the next week he had to fashion new soles out of the food-tins, renewing them almost daily. The job took two hours, and required no little skill. After four rather damp days at this camp they finally set off on September 14th, leaving most of their heavy instruments behind them. There was the $3\frac{1}{4}$ -inch theodolite and a time-signal set, which had not been improved by their fall through the ice on Rymill's sledge; a tent, two revolvers, a rifle and a sextant. It was only just possible to get the sledge over the almost vertical-sided ridges, but every mile with the sledge was valuable as load-carrying would be a very slow and laborious job necessitating three relays at least—5 miles of travelling for every mile covered.

With the single sledge about 3 miles per day could be done,

but the kayaks had to be carried on ahead each day, for they would soon have been smashed if they had been carried on the sledge as before. Quite large flocks of snow buntings were seen nearly every day now as well as several ravens. Exactly fifty years previously Nordenskiöld's party had seen ravens flying on the Ice Cap less than a hundred miles from this very spot. It was this that led him to suggest the existence of an oasis in the interior of the Ice Cap.

On September 18th, after almost continuous snow for thirty-six hours, travelling was possible again. But 3 feet of snow in many places made things even more difficult, as all the water-holes and streams were hidden and every few steps they would find themselves breaking through, often to above the knee. As it was freezing hard again their wet clothes immediately became stiff. The dogs were very miserable and sledge travel was temporarily abandoned, loads of about a hundred pounds being carried onwards to the kayaks. From here it could plainly be seen that there was only one more ridge between them and the rocky land, now only about 2 miles distant.

Camp was pitched on what soon turned out to be a frozen pond, but luckily it did not give way. During the night a wind got up which cleared away most of the snow, making the hazards more visible again. Next day, before the wind and drifting snow made further travel impossible, the sledge was pushed on to where the rest of the equipment was. There was only one day's dog food left and the dogs were so hungry that they were eating anything, even tearing pieces out of the tent.

On the 20th the wind increased so that it was almost impossible to stand up on the slippery surface. On one occasion when Rymill was walking ahead trying to find a way through the ridges he was blown into a river by the wind, and arrived back even wetter than the bedding, which at this stage had to be wrung out each morning. Next day load-carrying was continued, but as many of the gullies were here about 30 feet deep it was very slow work and steps had to be kicked up most of the ridges. It was obvious that the

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sledge could not be used any further, so reluctantly they dispatched the remaining dogs.

September 22nd was Hampton's birthday, which was celebrated with a slab of chocolate and a buttered biscuit. It was a fine day at last, so that the bedding could be more or less dried, while the loads were carried in relays almost to the summit of the final ridge. It was no easy task negotiating these precipitous gullies and smooth ice walls with loads of a hundred pounds on their backs. The next two days were spent carrying loads over similar going. As well as kayaks, and food for about a month, they had to take rifles, seal-hunting equipment, the tent and bedding. All this could be loaded into, or on, the kayaks, once they reached open water; though they greatly feared that the lakes and rivers on which they had depended would now be frozen over. However, if the West Coast gales were at all similar to those experienced near our Base the year before, it would be reasonable to hope that the ice would be broken up fairly frequently. They were therefore rather pleased than otherwise when on September 25th they were kept in most of the day by a blizzard.

When the wind died down somewhat towards evening, the accompanying thaw had opened up many of the rivers and melted much of the snow, so that they were often blown over when carrying the kayaks. Twice Rymill went through up to the waist and had to be pulled out. They were making for a small nunatak of which there were several hereabouts—small islands in a turbid sea of ice. Unlike the East Coast nunataks there was moss and other vegetation growing on them, affording suitable camp-sites. They reached the nunatak next day, after making wide detours to avoid bad crevasses. It was wonderful to be on land again after the grim monotony of the ice. There was good firm rock and springy turf, and rounding a corner after bringing a second load along they suddenly came on four white Arctic hares feeding on a grassy bank. Unfortunately the rifles were still at the last camp and when they returned later, armed, the potential juggled hare had disappeared.

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A little further on two Caribou heads and many bones were discovered, as well as signs of Ptarmigan. Being completely exhausted after carrying loads of over a hundred pounds and living on short ration, they lay down in the sun on the warm soft ground and slept for a few hours.

Here a large lake separated them from the mainland, and they hoped that after two days spent in bringing on the rest of the loads they would be able to say goodbye to the Ice Cap, and at last take to the kayaks and cross the lake—always provided that it had not frozen over in the interval.

Thick fog, only varied by snow and rain, made travelling impossible for the next two days; but on the third day all the loads were carried to within half a mile of the land. Snow delayed them again, but the following day they were able to follow their previous tracks. It was essential to push on because food and paraffin were running short. They had been on less than half-rations for some days now; and though they had food which could be made to last another fortnight, and hoped to augment this by shooting some hares or birds, and later harpooning a seal or catching some cod, they did not know how long it would take them to get down to the mouth of the fjord.

From now on they had to limit the consumption of paraffin, allowing themselves only one hot meal each day, though the primus had to be used a little to thaw out their socks, which were always as stiff as boards by the morning. Breakfast consisted of raw pemmican and water, lunch of a buttered biscuit, and supper of a plate of hot porridge. Thoughts of food occupied their minds most of the day. Many tracks of hare and caribou were found, but the actual animals were not seen.

On the last day of the month all the loads were eventually pushed forward to the edge of the lake, but it had been freezing hard again for the last day or two and the lake was frozen over. The actual descent down the 800-foot ice-fall on to the lake was the worst going they had yet encountered, though

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part of it could be avoided by keeping to the far side of the nunatak.

They were hoping for a gale now to break up the ice on the lakes, and to clear some of the snow off the ground. Since they had left the Ice Cap and were walking on land, the loads were cut down to two relays of about 100 lb. each, excluding the kayaks, each of which weighed about 80 lb. Even if they had to stop for frequent rests it would save a great deal of time if they made only three journeys instead of five over each lap. But every morning they had to walk on ahead to decide which way they should go, as the map was sadly inaccurate as to detail. Naturally their advance was painfully slow and they were longing for the time when they could use their kayaks. It would be most disappointing if, after sledging kayaks right across the Ice Cap and so laboriously carrying them through the rough ice, they were unable to make use of them. On October 3rd an advance of 2 miles was made, mostly downhill, over undulating country. At sunset they reached the edge of a lake on which there were two ducks. Unfortunately the sights of the rifle had got damaged on the way over the Ice Cap, and they failed to shoot either birds or hares.

Two more miles on the following day brought them within sight of a large lake, which was luckily only frozen at the edges. After a very cold night the loads were carried to the edge of this lake and they joyfully set about preparing the kayaks for work. Trying to fit a lot of equipment inside, and on the deck of, a kayak is not unlike doing a jigsaw puzzle, and by the time they took to the water late in the evening the kayaks floated so low that the decks were almost awash. This made them all the steadier, however, and after a few preliminary wobbles they were soon back to their old form and set off straight down the lake. The rhythmical and almost effortless paddling of a kayak was a marvellous change after weeks of sledging followed by laborious load-carrying over steep and treacherous surfaces.

There was a fair wind causing large ripples, which occasionally

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broke over the kayaks, threatening to soak the deck-cargo. It had turned cold as the sun set behind the mountains ahead, and layers of ice froze on to the canoes and paddles. By the time the mouth of the lake was reached—almost 2 miles distant—there was about half an inch of ice on the kayaks and on the hunting instruments, which were frozen firmly to the deck. It was lucky that they had the lake behind them, for on the following night it froze over completely.

Next day, on emerging from the tent, they saw the tracks of a caribou which had walked just by them in the night. They decided that they could not spare the time to follow it, especially as several hours had to be spent scraping the ice off the kayaks, which were now almost twice their original weight.

Once again load-carrying had to be resumed, along the banks of a large river which had frozen over. Here Eskimo seal-skin boots could be worn instead of climbing-boots. This was not only much more comfortable but a great saving of paraffin, for each morning the climbing boots had to be thawed out before they could be put on, and as soon as they left the tent became completely rigid, which was not very conducive to comfort. The frozen margins of the lakes made very good walking, as the snow-covered grass was too slippery for seal-skin boots. However, it was very disappointing not to be able to kayak down the river, and the loss of time necessitated an even further reduction of rations. They did not feel any weakness resulting from lack of food, but they were more susceptible to the cold. At night they had to keep all their clothes on to get any sleep, and in the daytime a chilly wind from the Ice Cap made life unpleasant the moment they stopped to rest. They could hardly be more than 10 miles from the fjord now, and it was annoying to think that had they been a week or two earlier they could have kayaked the distance in a single morning.

On the evening of October 9th, relaying loads on for about 3 miles brought them to the junction of two rivers, and just ahead the river appeared to be open. Next day the open water was reached. There was a very strong current flowing, but they

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decided to launch the kayaks and soon found them to be excellent craft for shooting rapids. Although stones were continually scraping along the bottom of the kayak the skins seemed sufficiently tough. Sometimes they would get stuck in soft muddy shallows, for the river appeared to be nowhere very deep. As lower levels were reached birds became more abundant, and on this day two White-tailed Eagles were seen flying over the river. After 2 miles everything started freezing again and the tent was pitched on a sand-bank.

Following an early start on the next day several miles of rapids had been covered in an extremely short time when, with remarkable suddenness, an adventure befell them which might well have been their last. Hampton was in the lead when he came to one of the many rapids, at a bend of the river, on the far side of which was a projecting sheet of ice. As he was shooting the rapid, which appeared no worse than others, a violent cross-current caught his kayak and, in spite of his frantic efforts with the paddle, swung the back of it under the ice-ledge, causing him to upset. Rymill, paddling along behind, saw all this happen and quickly came to the rescue. Unfortunately he too misjudged the corner, turned turtle, and he and his kayak were quickly swept under the ice by the powerful current. Hampton meanwhile was carried along upside down by the stream, and after one or two attempts to right himself in the approved manner, which were foiled by the strength of the current, he dropped his paddle and forced himself out of his kayak. On emerging from the water he was surprised to see no sign of his companion.

Rymill had been less fortunate in not having rounded the bend before he capsized. As he was swept along under water he could hear and feel the bottom of his kayak bumping on the firm ice above him. He was just beginning to wonder what would happen next when suddenly the bumping ceased. He also abandoned his kayak, and grasping the edge of the ice on the far side of an opportune stretch of open water, was able to pull himself out before he was swept on under the ice once more.

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After this solitary open pool the ice continued unbroken for several miles, so that it was extraordinarily fortunate that Rymill's kayak reappeared where it did, and that he was able to wriggle out of it before he disappeared with it under the ice again. Hampton succeeded in getting his kayak and himself out on to the ice, which was luckily fairly strong. Both had lost their paddles in the encounter, and Rymill's kayak had been dragged on right under the ice. Luckily it soon caught against a downward-projecting ledge, and after a certain amount of fishing was recovered.

Being somewhat shaken and extremely cold, they made camp on a sand-bank which projected through the ice. The sleeping-bags, the tent and every shred of clothing were soaked, and the rest of the day and most of the night were spent in trying to dry them with what paraffin they had left. Then, to make matters worse, the river rose in the night, in spite of its icy covering, and the sandy floor of the tent was rapidly converted into a marsh. While Hampton moved the camp on to the mainland Rymill walked on ahead and discovered that the end of the fjord was only a mile away. Luckily there was plenty of dwarf birch growing on the hill-sides, and this, owing to its resinous nature, provides excellent fuel for camp fires. A large fire was started, and the rest of the day given up to drying clothes and making new paddles out of the tent-poles. A snowstorm in the evening suspended drying operations, but they were continued on the day following till most of the bedding and garments were dry.

As the river was frozen over for the rest of its course, everything had to be carried on once more over the ridge separating their camp from the open fjord. From the top of this ridge, just across the water, Mount Evans, where Professor Hobbs' meteorological station was, could be plainly seen; but more exciting still, no less than six seals were counted playing about in the fjord below. This was a very welcome sight as by that time they were extraordinarily hungry, and from their kayaks they ought to be able to harpoon or shoot a seal. On October 15th, after the warmest and driest

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night they had spent for some time, they were just carrying the last loads over the ridge, when to their amazement they saw below them, down on the other side of the fjord, a good-sized fishing boat.

It was with mingled feelings that they gazed on this unexpected link with civilization. It would be terribly disappointing not to finish the journey in their kayaks, especially when they had overcome such tremendous obstacles and had only the most pleasurable part ahead. On the other hand they were very much overdue, and thought it would be as well to reach Holsteinborg as soon as possible in order to send messages back to their parents, who might be getting anxious. Also—and this was a powerful influence—the boat would probably have plenty of good food on board. Accordingly they kindled a fire and fired off rifle-shots to attract the owners of the boat, who, they presumed, were a party of Eskimo hunters who had come up to get caribou. Being too far away to attract their attention, they set off in the gathering dusk to walk round (about 7 miles) to the boat, hoping that the owners would stay the night. After three or four hours of walking, coming to the top of a ridge they saw with joy the boat still anchored below them. Three shots were fired off, and were answered with loud cheers from those on board, who sent a dinghy ashore for them.

The owner of the boat, a Greenlander who spoke somewhat broken English, then stepped out and broke the news to them that he was in charge of a search party which had been sent by the Governor of Holsteinborg, for our Committee, to look for them. They were then about a month overdue. The Greenlanders had for five days searched all the approaches to the Ice Cap on the Mount Evans side of the fjord, and were about to start on the Southern side on the following day. In their cheerful Eskimo way the search party had long ago given Rymill and Hampton up for dead, but hoped to find at any rate some remains.

Aougest, the owner, then took Rymill and Hampton below and gave them a most delectable meal of tea (with milk and sugar for a change), real bread and real butter, as well as tinned delicacies sent by Rasmussen the Governor of Holsteinborg. After so long

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a period of short rations they were disappointed to find how little they could eat before they were stopped by awful pains in the stomach. It is difficult to realize, till one has been through a similar period of privation oneself, how wonderful such a meal can be. After coffee they retired to bed between real blankets—but not to sleep. The change—coming as it did so unexpectedly—produced such a feeling of unreality and amazement that sleep was out of the question. Who could have believed, twenty-four hours ago, that this would happen? They seemed to be in another world, and already their experience had become remote and almost inconceivable.

Four Greenlanders set off early next morning to retrieve the remainder of their kit, but owing to a violent gale from the Ice Cap they had to spend an uncomfortable night in the tent, eating what food there was left. Next day, however, two of them appeared paddling along with tent-poles, looking very small in Rymill's and Hampton's prodigiously large kayaks, while the others walked round. Then, before darkness fell, about 60 miles of the homeward journey were covered.

Rymill and Hampton had been given large meals of halibut and seal, and by this time had finished all the ship's supply of sugar, as well as what the Governor had sent them. August stopped to show them off at most of the Settlements on the way down to Holsteinborg, which was reached on the morning of October 19th. A gale had been blowing a large part of the time, but as it was behind it merely helped them on their way. The small boat leapt about so much that Hampton later described this as by far the worst part of the whole journey!

At Holsteinborg they received a tremendous welcome, and the whole Settlement turned out to see the two Englishmen who had been given up for dead. The usual wonderful Danish hospitality was shown them by Mr. and Mrs. Rasmussen, a house and servant being put at their disposal, and delightful days were spent eating enormous meals and listening to wireless and gramophones.

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On October 1st they took passage to Denmark in the *Hans Egede* with Watkins and Courtauld, who had come up the coast to meet them. Lemon had gone straight back to his military duties from Julianchaab. They were the last of the expedition to return home, for Scott, Stephenson and Lindsay had reached Copenhagen by cargo ship from Ivigtut at the end of August, while the *Gertrud Rask*, with D'Aeth, Bingham, Cozens, Riley, Wager and myself on board, had arrived there in September.

Southern Greenland, showing the Seven Journeys of THE BRITISH ARCTIC AIR ROUTE EXPEDITION 1930-31



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